TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

TCEQ DOMESTIC WASTEWATER PERMIT APPLICATION DOMESTIC ADMINISTRATIVE REPORT

Submit this checklist with the application. Do not submit the instructions with the application. Indicate if the following are included in the application.

APPLICANT City of Dripping Springs

PERMIT NUMBER WQ0014488003

WORKSHEET	Y	N		Y	N
Administrative Report 1.0	☒	☐	Affected Landowner Map	☒	☐
Administrative Report 1.1	☒	☐	Buffer Zone Map	☒	☐
SPIF	☒	☐	Flow Diagram	☒	☐
Technical Report 1.0	☒	☐	Site Drawing	☒	☐
Technical Report 1.1	☒	☐	Original Photographs	☒	☐
Worksheet 2.0	☒	☐	Design Calculations	☒	☐
Worksheet 2.1	☐	☒	Design Features	☒	☐
Worksheet 3.0	☐	☒	Solids Management Plan	☒	☐
Worksheet 3.1	☐	☒	Water Balance	☐	☐
Worksheet 4.0	☐	☒	Landowner Disk or Labels	☒	☐
Worksheet 5.0	☐	☒	Copy of Application Fee Check	☒	☐
Worksheet 6.0 (required for all POTWs)	☒	☐	All Fees Owed TCEQ are Paid	☒	☐
Worksheet 7.0	☐	☒			
Original USGS Map	☒	☐			

Please indicate the amount submitted for the application fee (check only one):

Flow	New/Major Amendment	Renewal
<0.05 MGD	☐ $350.00	☐ $315.00
≥0.05 but < 0.10 MGD	☐ $550.00	☐ $515.00
≥0.10 but < 0.25 MGD	☐ $850.00	☐ $815.00
≥0.25 but < 0.50 MGD	☐ $1,250.00	☐ $1,215.00
≥0.50 but < 1.0 MGD	☒ $1,650.00	☐ $1,615.00
≥ 1.0 MGD	☐ $2,050.00	☐ $2,015.00

Minor Amendment (any flow) ☐ $115.00

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A copy of the application fee check must be submitted with the application.

FOR COMMISSION USE ONLY

Segment Number New County Hays

Expiration Date New Region 11

Proposed/Current Permit Number 14488003 TX0136778

DOMESTIC ADMINISTRATIVE REPORT 1.0

The following is required for all applications: Renewal, New, and Amendment

Type of application:

- [x] New TPDES
- [ ] New TLAP
- [ ] Major amendment with renewal
- [ ] Minor amendment with renewal
- [ ] Major amendment without renewal
- [ ] Minor amendment without renewal
- [ ] Renewal (no changes)
- [ ] Minor modification of permit

If applying for an amendment or renewal with changes, describe the request in detail.

1. Applicant Information

(Instructions, Page 24)

a. Facility owner

(Owner of the facility must apply for the permit.)

Provide the Legal Name of the entity (applicant) applying for this permit (The legal name must be spelled exactly as filed with the Texas Secretary of State, County, or in the legal document forming the entity.):

City of Dripping Springs

If the applicant is currently a customer with TCEQ, provide the Customer Number (CN):
CN: 602491284

What is the applicant's contact information and mailing address as recognized by the **US Postal Service**?

Phone No.: (512) 969-4725 Extension:

Fax No.: 512-858-5646 E-mail Address: gfaught@cityofdrippingsprings.com

Organization Name: City of Dripping Springs

Mailing Address: P.O. Box 384

Internal Routing (Mail Code, Etc.):

City: Dripping Springs State: TX ZIP Code: 78620

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Mailing Information if outside USA

Territory:____________ Country Code:____________ Postal Code:____________

Indicate the type of Customer:

- ☐ Individual
- ☐ Limited Partnership
- ☐ Trust
- ☐ Federal Government
- ☐ County Government
- ☐ Other Government
- ☐ Sole Proprietorship-D.B.A.
- ☐ Corporation
- ☐ Estate
- ☐ State Government
- ☑ City Government
- ☐ Other:____________

Independent entity

☐ Yes ☒ No *(If governmental entity, subsidiary, or part of a larger corporation)*

Number of Employees:

☒ 0-20; ☐ 21-100; ☐ 101-250; ☐ 251-500; or ☐ 501 or higher

Customer Business Tax and Filing Numbers

*(Not applicable to individuals, governments, general partnerships or sole proprietors. **REQUIRED** for corporations and limited partnerships)*

State Franchise Tax ID Number:____________

TX SOS Charter (filing) Number:____________

Federal Tax ID: 74-2340036

DUNS Number (if known):____________

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b. Co-permittee information

Complete only if the operator must be a co-permittee).

Provide the Legal Name of the entity (operator) applying for this permit (The legal name must be spelled exactly as filed with the Texas Secretary of State, County, or in the legal document forming the entity.):

Operator:____

If the operator is currently a customer with TCEQ, provide the Customer Number (CN)?
CN:____

Provide the co-permittee's contact information and mailing address as recognized by the **US Postal Service**:

Organization Name:____________________________________

Mailing Address:____________________________________

Internal Routing (Mail Code, Etc.):__________________________

City:__________________State:________ZIP Code:________

Mailing Information if outside USA

Territory:________Country Code:________Postal Code:________

Indicate the type of Customer:

- ☐ Individual
- ☐ Limited Partnership
- ☐ Trust
- ☐ Federal Government
- ☐ County Government
- ☐ Other Government
- ☐ Sole Proprietorship-D.B.A.
- ☐ Corporation
- ☐ Estate
- ☐ State Government
- ☐ City Government
- ☐ Other:________________

Independent entity

☐ Yes ☐ No *(If governmental entity, subsidiary, or part of a larger corporation)*

Number of Employees:

☐ 0-20; ☐ 21-100; ☐ 101-250; ☐ 251-500; or ☐ 501 or higher

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Customer Business Tax and Filing Numbers

*(Not applicable to individuals, governments, general partnerships or sole proprietors. **REQUIRED** for corporations and limited partnerships)*

State Franchise Tax ID Number:______________________________

TX SOS Charter (filing) Number:______________________________

Federal Tax ID:______________________________

DUNS Number (if known):______________________________

Provide a brief description of the need for a co-permittee:

c. Individual information

Complete only if the facility owner or co-permittee is an individual.

Provide the full Legal Name of the Individual (Owner/Co-permittee) applying for this permit: ______________________________

If the owner/co-permittee is currently a customer with TCEQ, provide the Customer Number (CN)**:**______________________________

Provide the applicant's contact information and mailing address as recognized by the **US Postal Service**?

Mailing Address:______________________________

Internal Routing (Mail Code, Etc.):______________________________

City:____________________State:__________ZIP Code:__________

Mailing Information if outside USA

Territory:__________Country Code:__________Postal Code:__________

2. Billing Contact

(Instructions, Page 28)

The permittee is responsible for paying the annual fee. The annual fee will be assessed to permits **in effect on September 1 of each year.** *TCEQ will send the bill to the address provided in this section. The permittee is responsible for terminating the permit when it is no longer needed using TCEQ form number 20029.*

Is the billing address the same as the permittee or co-permittee?

■ Permittee ☐ Co-permittee ☐ **No**, fill out this section

Prefix (Mr, Ms, Miss):

First/Last Name:

Suffix (Jr, Sr, III): Title: Credential:

Phone No.: Extension:

Fax No.: E-mail Address:

Organization Name:

Mailing Address:

Internal Routing (Mail Code, Etc.):

City: State: ZIP Code:

Mailing Information if outside USA

Territory: Country Code: Postal Code:

3. Application Contact Information

(Instructions, Page 28)

If TCEQ needs additional information regarding this application, who should be contacted?

a. First application contact

Prefix (Mr, Ms, Miss): Mr.

First/Last Name: Robert Callegari, P.E.

Suffix (Jr, Sr, III): Title: Principal Credential:

Phone No.: (512) 432-1000 Extension:

Fax No.: 512-432-1015 E-mail Address: rcallegari@cma-engineering.com

Organization Name: CMA Engineering, Inc.

Mailing Address: 235 Ledge Stone Drive

Internal Routing (Mail Code, Etc.):

City: Austin State: TX ZIP Code: 78737

Mailing Information if outside USA

Territory: Country Code: Postal Code:

Check one or both: ☐ Administrative contact ■ Technical Contact

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b. Alternate application contact

Prefix (Mr, Ms, Miss): Ms.

First/Last Name: Ginger Faught

Suffix (Jr, Sr, III): Title: Deputy City Administrator Credential:

Phone No.: (512) 858-4725 Extension:

Fax No.: 512-858-5646 E-mail Address: gfaught@cityofdrippingsprings.com

Organization Name: City of Dripping Springs

Mailing Address: P.O. Box 384

Internal Routing (Mail Code, Etc.):

City: Dripping Springs State: TX ZIP Code: 78620

Mailing Information if outside USA

Territory: Country Code: Postal Code:

Check one or both: ■ Administrative contact ☐ Technical Contact

4. DMR/MER Contact Information

(Instructions, Page 28)

Contact Responsible for Discharge Monitoring Reports (EPA 3320-1) or Monthly Effluent Reports. Provide the name of the person and their complete mailing address delegated to receive and submit Discharge Monitoring Report Forms.

Prefix (Mr, Ms, Miss): Mr.

First/Last Name: Pat King

Suffix (Jr, Sr, III): Title: Principal Credential:

Phone No.: (512) 894-3322 Extension:

Fax No.: 512-894-3310 E-mail Address: pck@pgms.net

Organization Name: Professional General Management Services, Inc.

Mailing Address: 26550 Ranch Road 12, Suite 1

Internal Routing (Mail Code, Etc.):

City: Dripping Springs State: TX ZIP Code: 78620

Mailing Information if outside USA

Territory: Country Code: Postal Code:

Did you know you can submit DMR data on line?
Go to Sign up now at:
http://www.tceq.texas.gov/field/netdmr/netdmr.html
Establish an electronic reporting account when you get your permit number.

5. Permit Contact Information

(Instructions, Page 28)

Provide two names of individuals that can be contacted throughout the permit term.

Prefix (Mr, Ms, Miss): Ms.

First/Last Name: Ginger Faught

Suffix (Jr, Sr, III): ________ Title: Deputy City Administrator Credential: ________

Phone No.: (512) 858-4725 Extension: ________

Fax No.: 512-858-5646 E-mail Address: gfaught@cityofdrippingsprings.com

Organization Name: City of Dripping Springs

Mailing Address: P.O. Box 384

Internal Routing (Mail Code, Etc.): ________

City: Dripping Springs State: TX ZIP Code: 78737

Mailing Information if outside USA

Territory: ________ Country Code: ________ Postal Code: ________

Prefix (Mr, Ms, Miss): MR.

First/Last Name: Robert Callegari, P.E.

Suffix (Jr, Sr, III): ________ Title: Principal Credential: ________

Phone No.: (512) 432-1000 Extension: ________

Fax No.: 512-432-1015 E-mail Address: rcallegari@cma-engineering.com

Organization Name: CMA Engineering, Inc.

Mailing Address: 235 Ledge Stone Drive

Internal Routing (Mail Code, Etc.): ________

City: Austin State: TX ZIP Code: 78737

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Mailing Information if outside USA

Territory: ________ Country Code: ________ Postal Code: ________

6. Notice Information

(Instructions, Page 29)

a. Individual associated with the applicant responsible for publishing the notices

Prefix (Mr. Ms, Miss): Mr.

First/Last Name: Robert Callegari, P.E.

Suffix (Jr, Sr, III): ______ Title: Principal ______ Credential: ______

Phone No.: (512) 432-1000 ______ Extension: ______

Fax No.: 512-432-1015 ______ E-mail Address: rcallegari@cma-engineering.com

Organization Name: CMA Engineering, Inc.

Mailing Address: 235 Ledge Stone Drive

Internal Routing (Mail Code, Etc.): ______

City: Austin ______ State: TX ______ ZIP Code: 78737

Mailing Information if outside USA

Territory: ______ Country Code: ______ Postal Code: ______

b. Method for receiving Notice of Receipt and Intent to Obtain a Water Quality Permit Package

Indicate by a check mark the preferred method for receiving the first notice and instructions:

- [x] E-mail Address: rcallegari@cma-engineering.com
- [ ] Fax No.: ______
- [ ] Overnight/Priority mail: (self addressed, prepaid envelope required)
- [x] Regular Mail:

  Mailing Address: 235 Ledge Stone Drive

  Internal Routing (Mail Code, Etc.): ______

  City: Austin ______ State: TX ______ ZIP Code: 78737

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c. Contact in the notice

Prefix (Mr. Ms, Miss): Mr.

First/Last Name: Robert Callegari, P.E.

Suffix (Jr, Sr, III): ______ Title: Principal ______ Credential: ______

Organization Name: CMA Engineering, Inc.

Phone No.: (512) 432-1000 ______ Extension: ______

d. Public place information

If the facility and/or outfall is located in more than one county, a public viewing place for each county must be provided.

Public Building name: City of Dripping Springs City Hall

Location within the building: Front Desk

Physical address of building: 511 Mercer Street

City: Dripping Springs ______ County: Hays

Contact Name: Ginger Faught

Phone No.: (512) 858-4725 ______ Extension: ______

e. Bilingual notice requirements

For new permit applications, major amendment and renewal applications. Not applicable for minor amendment or minor modification applications.

Please call the bilingual/ESL coordinator at the nearest elementary and middle schools and obtain the following information to determine if an alternative language notice is required:

1. Is a bilingual education program required by the Texas Education Code at the nearest elementary or middle school to the facility or proposed facility?

☒ Yes ☐ No

(**If No**, alternative language notice publication is not required; skip to item 7. Regulated Entity and Permitted Site Information.)

2. Are the students who attend either the elementary school or the middle school enrolled in a bilingual education program at that school?

☐ Yes ☒ No

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3. Do the students at these schools attend a bilingual education program at another location?

■ Yes ☐ No

4. Would the school be required to provide a bilingual education program but the school has waived out of this requirement under *19 TAC §89.1205(g)*?

☐ Yes ■ No

5. If the answer is yes to 1, 2, 3, or 4, public notice in an alternative language is required. Which language is required by the bilingual program?

____

This section of the application is only used to determine if alternative language notice will be needed. Complete instructions on publishing the alternative language notice will be in your public notice package.

7. Regulated Entity and Permitted Site Information

(Instructions, Page 30)

If the site of your business is part of a larger business site, a Regulated Entity Number (RN) may already be assigned for the larger site. Use the RN assigned for the larger site. Search TCEQ's Central Registry to see if the larger site may already be registered as a regulated site at:
http://www15.tceq.state.tx.us/crpub/index.cfm?fuseaction=regent.RNSearch

If the site is found, provide the assigned Regulated Entity Reference Number and provide the information for the site to be authorized through this application below. The site information for this authorization may vary from the larger site information.

TCEQ issued RE Reference Number (RN): **RN:** 104005434

a. State/TPDES Permit No.: WQ0014488003 Expiration date: __________

EPA Identification No. (TPDES Permits only): TX WQ0014488003

b. Name of project or site (the name known by the community where located):
City of Dripping Springs South Regional Wastewater Facilities

c. Is the facility located in Bexar, Comal, Hays, Kinney, Medina, Travis, Uvalde, or Williamson County?

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■ Yes ☐ No

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(**If Yes**, additional information concerning protection of the Edwards Aquifer may be required.)

d. Site location description information

Complete both sections, A and B. If the site does not have a physical address, check "No" in Section A and continue to Section B.

Section A: Site physical address.

Does the site have a physical address?

☒ Yes ☐ No

Verify the address with USPS and proceed to Section B below. If the address is not recognized as a delivery address, provide the address as identified for overnight mail delivery, 911 emergencies, or other online map tool to confirm an address.

Physical Address of Project or Site:

Street Number: 23127 Street Name: Ranch Road 150

City: Dripping Springs, TX ZIP Code: 78620

Section B: Site location information.

Is the location of the facility used in the existing permit correct?

☒ Yes ☐ No

If the location description is not accurate or this is a new permit application, provide a written location access description to the site:

The wastewater treatment facility and subsurface disposal site are located approximately 0.55 miles east of the intersection of Ranch Road 12 and Farm-to-Market Road 150 as measured along Farm-to-Market Road 150, and from that point approximately 1,100 feet south of Farm-to-Market Road 150.

(Ex.: located 2 miles west from intersection of Hwy 290 & IH35 accessible on Hwy 290 South)

e. City where the site is located or, if not in a city, what is the nearest city:

City of Dripping Springs

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f. ZIP Code where the site is located: 78620

g. County where the site is located: Hays

h. Latitude: N 30° 9' 15.05" Longitude: W 98° 4' 48.93"

i. In your own words, briefly describe the primary business of the Regulated Entity: *(Do not repeat the SIC and NAICS code)*

Domestic Wastewater Treatment Facility

j. Owner of treatment facility: City of Dripping Springs

Ownership of Facility: ☒ Public ☐ Private ☐ Both ☐ Federal

k. Owner of land where treatment facility is/will be:

City of Dripping Springs

(If not the same as the facility owner, there must be a long term lease agreement in effect for at least six years. In some cases, a lease may not suffice - see instructions page 33.)

l. Owner of effluent disposal site:

N/A

(If not the same as the facility owner, there must be a long term lease agreement in effect for at least six years.)

m. Owner of sewage sludge disposal site:

N/A

(Required only if authorization is sought in the permit for sludge disposal on property owned/controlled by the applicant.)

8. Discharge/Disposal Information

(Instructions, Page 34)

ALL permits complete the following

a. Is the facility located on or does the treated effluent cross Indian Land?

☐ Yes ☒ No

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b. Provide an **original** full size USGS Topographic Map with all applicable required information. Indicate by a check mark that the information is provided.

See Attachment 1

- ☑ Applicant's property boundary
- ☑ Treatment facility boundaries
- ☑ Labeled point of discharge and highlighted discharge route
- ☐ Onsite sewage sludge disposal site
- ☐ Effluent disposal site boundaries
- ☑ New and future construction
- ☑ 1 mile radius and 3 miles downstream information
- ☑ All ponds

c. If the existing permit contains an onsite sludge disposal authorization, is the location of the sewage sludge disposal site in the existing permit accurate?

☐ Yes ☐ No

If no, or if a new onsite sludge disposal authorization is being requested for the first time in this permit application, please give an accurate description.

N/A

TPDES permits complete the following

d. Is the point of discharge and the discharge route in the existing permit correct?

☐ Yes ☐ No

If no, or a new or amendment permit application, please give an accurate description.

Discharge through a 12 inch pipe to Walnut Springs; thence to Onion Creek; thence to Segment No. 1427 of the Colorado River Basin.

e. City or Town in which the outfall(s) is or will be located

City of Dripping Springs

f. County where outfall(s) are located: Hays

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g. Outfall - Latitude: N 30° 10' 38.02" Longitude: W 98° 5' 27.27"

Use degrees-minutes-seconds to the nearest second or decimal degrees to 4 decimal places (Ex: 30 - 10' - 25" or 30.1736).

h. Will the treated wastewater be discharged to a city, county, or state highway right-of-way, or a flood control district drainage ditch?

☐ Yes ☒ No

If Yes, indicate by a check mark if:

☐ Authorization granted ☐ Authorization pending

(For new and amendments, provide copies of letters that show proof of contact and the approval letter upon receipt.)

i. For all applications involving an average daily discharge of 5 million gallons per day or more, provide the names of all counties located within 100 statute miles downstream of the point(s) of discharge.

NA

TLAP permits complete the following

j. Is the location of the effluent disposal site in the existing permit accurate?

☐ Yes ☐ No

If no, or a new or amendment permit application, please give an accurate description.

k. City or Town in which the disposal site is or will be located: ____________

l. County where disposal site is located: ____________

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m. Disposal site - Latitude:________________ Longitude:________________

Use degrees-minutes-seconds to the nearest second or decimal degrees to 4 decimal places (Ex: 30 - 10' - 25" or 30.1736).

n. If a TLAP, describe the routing of effluent from the treatment facility to the effluent disposal site:

o. For TLAP applications please identify the nearest watercourse to the disposal site to which rainfall runoff might flow if not contained:

____

9. Miscellaneous Information

(Instructions, Pages 37)

a. List each person formerly employed by the TCEQ who represented your company and was paid for service regarding the application:

N/A

b. Do you owe fees to the TCEQ?

☐ Yes ☒ No

If yes, please provide:

Account number:__________________ Amount past due:__________________

c. Do you owe any penalties to the TCEQ?

☐ Yes ☒ No

If yes, please provide:

Enforcement order number________________ Amount past due________________

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10. Signature Page

(Instructions, Page 39)

Permit Number WQ0014488003

Applicant City of Dripping Springs

Certification:

I/We certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I further certify that I am authorized under ***30 Texas Administrative Code §305.44*** to sign and submit this document, and can provide documentation in proof of such authorization upon request.

Print or Type Signor's Name: Todd Purcell

Provide Signor's Title: Mayor, City of Dripping Springs

Signature *(Use blue ink)*:

Date: 10/19/15

Subscribed and Sworn to before me by the said LAURIE Whipple

on this 19 day of October, 20 15.

My commission expires on the 13 day of MAY, 20 18.

Notary Public Signature: Laurie Whipple [SEAL]

Hays County, Texas

LAURIE WHIPPLE
Notary Public, State of Texas
My Commission Expires
MAY 13, 2018

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If co-permittees are necessary, each entity must submit an original, separate signature page.

LAURIE WHIPPLE
Notary Public, State of Texas
My Commission Expires
MAY 13, 2018

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

SUPPLEMENTAL PERMIT INFORMATION FORM (SPIF)

FOR AGENCIES REVIEWING DOMESTIC

TPDES WASTEWATER PERMIT APPLICATIONS

TCEQ USE ONLY:
Application type:
____Renewal ____Major Amendment ____Minor Amendment X New
County: Hays
Admin Complete Date: 12/7/15
Agency Receiving SPIF:
☒ Texas Historical Commission ☒ U.S. Fish and Wildlife
☒ Texas Parks and Wildlife Department ☒ U.S. Army Corps of Engineers

Supplemental Permit Information

(Instructions, Page 40)

<u>This form applies to TPDES permit applications only.</u> The SPIF must be completed as a separate document. The TCEQ will mail a copy of the SPIF to each agency as required by the TCEQ agreement with EPA. If any of the items are not completely addressed and/or further information is needed, you will be contacted to provide the information before the permit is issued. Each item must be completely addressed.

Do not refer to a response of any item in the permit application form. Each attachment must be provided with this form separately from the administrative report of the application. The application will not be declared administratively complete without this form being completed in its entirety including all attachments.

The following applies to all applications:

1. Permittee: City of Dripping Springs
2. Permit No. WQ 0014488003 (EPA ID No.) TX 0136778
3. Address of the project (location description that includes street/highway, city/vicinity, & county).

City of Dripping Springs South Regional WWTP Facilities
23127 Ranch Road 150 South
Dripping Springs, Texas 78620

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4. Provide the name, address, phone and fax number of an individual that can be contacted to answer specific questions about the property.

Name: Robert Callegari, P.E. Phone number: (512) 432-1000

Company: CMA Engineering, Inc. Fax number: 512-432-1015

Street No.: 235 Street name: Ledge Stone Drive

Street type: Drive

P.O. Box: Email: rcallegari@cma-engineering.com

City: Austin State: TX Zip code: 78737

5. List the county in which the facility is located.

Hays County

6. If the property is publicly owned and the owner is different than the permittee/applicant, please list the owner of the property.

City of Dripping Springs (WWTP Site) and Development Solutions Cat, LLC (Discharge Point)

7. Provide a description of the effluent discharge route. The discharge route must follow the flow of effluent from the point of discharge to the nearest major watercourse (from the point of discharge to a classified segment as defined in *30 TAC Chapter 307*). If known, please identify the Segment Number.

Discharge through a 12 inch pipe to Walnut Springs; thence to Onion Creek; thence to Segment No. 1427 of the Colorado River Basin.

8. Please provide a separate 7.5 minute USGS quadrangle map with the project boundaries plotted and a general location map showing the project area. Please highlight the discharge route from the point of discharge for a distance of one mile downstream. (This map is required **in addition to** the map in the administrative report). See Attatchment 1 SPIF

9. Please provide original photographs of any structures 50 years or older on the property.

10. Does your project involve any of the following? **If Yes,** check the appropriate boxes.

- [x] Proposed access roads, utility lines, construction easements
- [ ] Visual effects that could damage or detract from a historic property's integrity
- [x] Vibration effects during construction, or as a result of project design
- [x] Additional phases of development that are planned for the future
- [ ] Sealing caves, fractures, sinkholes, other karst features
- [x] Disturbance of vegetation or wetlands

11. List proposed construction impact (surface acres to be impacted, depth of excavation, sealing of caves, or other karst features).

Proposed construction will consist of wastewater collection system improvements. As well as the proposed new WWTP construction and existing WWTP expansion, Treated effluent line construction in ROWs and/or easements, Impacts to caves are karst features are not anticipated.

12. Describe existing disturbances, vegetation and land use.

Any disturbances caused during construction will be returned to their original state or better when construction is complete. Existing vegetation is native grasses, and in the past land was used for ranching and hunting. Current land use at discharge point new is a subdivision.

THE FOLLOWING ITEMS APPLY ONLY TO APPLICATIONS FOR NEW TPDES PERMITS AND MAJOR AMENDMENTS TO TPDES PERMITS.

13. List construction dates of all buildings and structures on the property.

Construction of existing South Regional Wastewater Facilities (WWTP, effluent storage tank, and operations building/bard were completed in July 2008.

Subdivision construction at Caliterra (discharge point) began in mid 2014. New home Construction is ongoing.

14. Provide a brief history of the property, and name of the architect/builder, if known.

Past land was used for ranching and hunting. Current land use at discharge point (Outfall 003) is a subdivision.

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DOMESTIC ADMINISTRATIVE REPORT 1.1

The following is required for new and amendment applications.

1. Affected Landowner Information

(Instructions, Page 41)

a. Landowner map components

Indicate by a check mark that the landowner map or drawing, with scale, includes the following, as applicable.

- [x] The applicant's property boundaries See Attachment 2
- [x] The facility site boundaries within the applicant's property boundaries See Attachment 2
- [x] The distance the buffer zone falls into adjacent properties and the property boundaries of the landowners located within the buffer zone See Attachment 3
- [x] The property boundaries of all landowners surrounding the applicant's property See Attachment 2
- [x] The point(s) of discharge and highlighted discharge route clearly shown for one mile downstream See Attachment 4
- [x] The property boundaries of the landowners located on both sides of the discharge route for one full stream mile downstream of the point of discharge See Attachment 4
- [ ] The property boundaries of the landowners along the watercourse for a one-half mile radius from the point of discharge if the point of discharge is into a lake, bay estuary, or affected by tides
- [ ] The boundaries of the effluent disposal site (for example, irrigation area or subsurface drainfield site), all evaporation/holding ponds within the applicant's property
- [ ] The property boundaries of all landowners surrounding the applicant's property boundaries where the effluent disposal site is located
- [ ] The boundaries of the sludge land application site (for land application of sewage sludge for beneficial use) and the property boundaries of landowners surrounding the applicant's property boundaries where the sewage sludge land application site is located
- [ ] The property boundaries of landowners within one-half mile in all directions from the applicant's property boundaries where the sewage sludge disposal site (for example, sludge surface disposal site or sludge monofill) is located

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b. Landowner list media

Indicate by a check mark in which format the landowners list is submitted:

☒ Read/Writeable CD or Disk ☐ 4 sets of labels

c. Cross-referenced landowner list

Has a separate list with the landowners' names and mailing address cross-referenced to the landowners map been provided.

☒ Yes ☐ No See Attachments 2 and 4

d. Landowner data source

Provide the source of the landowners' names and mailing addresses.

Hays County Appraisal District

e. School fund land

As required by *Texas Water Code §5.115*, is any permanent school fund land affected by this application?

☐ Yes ☒ No

If yes, provide the location, foreseeable impacts, and effects this application has on the land(s).

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2. Buffer Zone Map

(Instructions, Page 44)

See Attachment 3

a. Buffer zone map components

Provide a buffer zone map on 8.5 x 11-inch paper. The applicant's property line and the buffer zone line may be distinguished by using dashes or symbols and appropriate labels. Indicate by a check mark that all the following information is included on the map.

- [x] The applicant's property boundary
- [x] The required buffer zone
- [x] Each treatment unit
- [x] The distance from each treatment unit to the property boundaries

b. Buffer zone compliance method

How will the buffer zone requirement be met?

- [x] Ownership
- [ ] Restrictive easement
- [ ] Nuisance odor control
- [ ] Variance

c. Unsuitable site characteristics

Does the facility comply with the requirements regarding unsuitable site characteristic found in *30 TAC §309.13(a) through (d)*?

[x] Yes [ ] No

3. Original Photographs

(Instructions, Page 48) See Attachment 5

- [x] Provide original ground level photographs. Indicate by a check mark that the following information is provided.
- [x] At least one original photograph of the new or expanded treatment unit location
- [x] At least two photographs of the existing/proposed point of discharge and as much area downstream (photo 1) and upstream (photo 2) as can be captured. If the discharge is to an open water body (e.g., lake, bay), the point of discharge should be in the right or left edge of each photograph showing the open water and with as much area on each respective side of the discharge as can be captured.
- [x] At least one photograph of the existing/proposed effluent disposal site
- [x] A plot plan or map showing the location and direction of each photograph

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TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
DOMESTIC WASTEWATER PERMIT APPLICATION

DOMESTIC TECHNICAL REPORT 1.0

The Following Is Required For All Applications

Renewal, New, And Amendment

1. Permitted or Proposed Flows

(Instructions, Page 49)

Table 1.0(1) - Existing/Interim I Phase

Design Flow (MGD)	0.399
2-Hr Peak Flow (MGD)	1.596
Estimated construction start date	August 2019
Estimated waste disposal start date	October 2020

Table 1.0(2) - Interim II Phase

Design Flow (MGD)	0.4975
2-Hr Peak Flow (MGD)	1.990
Estimated construction start date	August 2019
Estimated waste disposal start date	July 2021

Table 1.0(3) - Final Phase

Design Flow (MGD)	0.995
2-Hr Peak Flow (MGD)	3.980
Estimated construction start date	January 2021
Estimated waste disposal start date	October 2021

Current operating phase: Interim I of Permit WQ0014488001

Provide the startup date of the current phase: ____________________

Provide the startup date of the facility: 07/01/2008

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2. NAICS and SIC Code

(Instructions, Page 49)

Provide the appropriate SIC Code: 4952 and NAICS code: 22132

3. Treatment Process

(Instructions, Page 49)

a. Treatment process description

Provide a detailed description of the treatment process. **Include the type of treatment plant, mode of operation, and all treatment units.** Start with the plant's head works and finish with the point of discharge. Include all sludge processing and drying units. **If more than one phase exists or is proposed in the permit, a description of *each phase* must be provided.** Process description:

See Attachment 6 for Treatment Process Description

Port or pipe diameter at the discharge point: 12 inches

b. Treatment Units

Provide the type and dimensions (length, width, depth) **of each treatment unit, accounting for *all* phases of operation.**

Table 1.0(4) – Treatment Units

Treatment Unit Type	Number of Units	Dimensions (L x W x D)
See Attachment 7		Technical Memorandum 1 - Conceptual Design Services

c. Process flow diagrams

Provide flow diagrams for the existing facilities and/or **each** proposed phase of construction. Is the required information included?

☒ Yes ☐ No   See Attachment 7

4. Site Drawing

(Instructions, Page 50)

Provide a site drawing for the facility. Indicate by a check mark that it contains the following. See Attachment 8

- ☑ The boundaries of the treatment facility
- ☑ The boundaries of the area served by the treatment facility
- ☐ If land disposal of effluent, the boundaries of the disposal site and all storage/holding ponds
- ☐ If sludge disposal is authorized in the permit, the boundaries of the land application or disposal site

Provide the name and description of the area served by the treatment facility.

The area to be served by the treatment facility is the Greater Dripping Springs Area.

5. Unbuilt Phases

(Instructions, Page 51)

Is the application for renewal of a permit that contains an unbuilt phase or phases?

☐ Yes ☒ No

If yes, does the existing permit contain a phase that has not been constructed within five years of being authorized by the TCEQ?

☐ Yes ☒ No

If yes, provide a detailed discussion regarding the continued need for the unbuilt phase. Failure to provide sufficient justification may result in the Executive Director recommending denial of the unbuilt phase or phases.

6. Closure Plans

(Instructions, Page 51)

Have any treatment units been taken out of service permanently, or will any units be taken out of service in the next five years?

☐ Yes ☐ No

If yes, was a closure plan submitted to the TCEQ?

☐ Yes ☐ No

If yes, provide a brief description of the closure and the date of plan approval.

7. Permit Specific Requirements

(Instructions, Page 52)

a. Summary transmittal

Have plans and specifications been approved for the existing facilities and each proposed phase?

☒ Yes ☐ No

If yes, provide the date(s) of approval for each phase: 06/18/2007

For applicants with an existing permit: Check the *Other Requirements* or *Special Provisions* of the existing permit and provide information below (including dates) on any actions taken to meet an *Other Requirement* or *Special Provision* pertaining to the submission of a summary transmittal letter, if applicable. Also, if in possession of an approval letter from the TCEQ, provide a copy.

N/A

b. Buffer zones

Have the buffer zone requirements been met?

■ Yes ☐ No

For applicants with an existing permit: Check the *Other Requirements* or *Special Provisions* of the existing permit and provide information below (including dates) on any actions taken to meet the conditions of an *Other Requirement* or *Special Provision* pertaining to the buffer zone, if applicable. If available, provide any new documentation relevant to maintaining the buffer zones.

N/A

c. Other actions required by the current permit

For applicants with an existing permit: Check the *Other Requirements* or the *Special Provisions* of the existing permit. Does the *Other Requirements* or *Special Provisions* section in the current permit require submission of any other information? Or does it specify other required actions? Examples: Notification of Completion, progress reports, soil monitoring data, etc.

☐ Yes ■ No

Provide information below on the status of any actions taken to meet the conditions of an *Other Requirement* or *Special Provision* that requires submission of information to the TCEQ or other action.

d. Grit and grease treatment (Instructions, Page 53)

1. Transported loads of grit and grease

Does the facility have a grit and/or grease processing facility onsite that treats and decants or accept transported loads of grit and grease waste that are discharged directly to the wastewater treatment plant prior to any treatment?

☐ Yes ☒ No Separate grit or grease waste facility.

If No, stop here and continue with section e.

2. *Grit and grease processing*

Describe below how the grit and grease waste is treated at the facility. In your description, include how and where the grit and grease is introduced to the treatment works and how the grit and grease is separated or processed. Also, provide a flow diagram showing how grit and grease is processed at the facility.

3. *Grit disposal*

Describe below how the grit is disposed of. Does the facility have a Municipal Solid Waste (MSW) registration or permit for grit disposal? Note that a registration or permit is required for grit disposal and that grit shall not be combined with treatment plant sludge. See the instruction booklet for additional information on grit disposal requirements and restrictions.

☐ Yes ☐ No

If No, contact the TCEQ MSW team at 512-239-0000.

4. *Grease and decanted liquid disposal*

Describe below how the decant and grease are treated and disposed of after grit separation. Note that a registration or permit is required for grease disposal and that grease shall not be combined with treatment plant sludge (contact the TCEQ MSW team at 512-239-0000).

e. Stormwater management (Instructions, Page 54)

1. Applicability

Does the facility have a design flow (in any phase) of 1.0 MGD or greater?

☐Yes ☒No

Does the facility have an approved pretreatment program (under 40 CFR Part 403)?

☐Yes ☒No

If no to both of the above, then no further information is needed, and this item is complete.

2. MSGP coverage

Is the stormwater runoff from the WWTP and dedicated lands for sewage disposal currently permitted under the TPDES Multi Sector General Permit (MSGP), TXR050000?

☐Yes ☐No

If yes, please provide MSGP Authorization Number (TXR05#### or TXRNE####) ____and stop here.

If no, do you intend to seek coverage under TXR050000?

☐Yes ☐No

3. Conditional exclusion

Alternatively, do you intend to apply for a conditional exclusion from permitting based on having no exposure of industrial activity to stormwater (see instructions page 54)?

☐Yes ☐No

If yes, please explain below and then stop here:

Please refer to
http://www.tceq.state.tx.us/permitting/water_quality/stormwater/TXR05_steps.html
for additional information on how to apply for this permit.

4. Existing coverage in individual permit

Is your stormwater discharge currently permitted through this individual TPDES or TLAP permit?

☐ Yes ☐ No

If yes, provide a description of stormwater runoff management practices at the site that are authorized in the wastewater permit and stop here.

5. Zero stormwater discharge

Do you intend to have no discharge of storm water through evaporation or other means?

☐ Yes ☐ No

If yes, explain below and stop here. Note that if there is a potential to discharge any stormwater to surface water in the state as the result of any storm event, then permit coverage is required under the MSGP or an individual discharge permit.

Note that your facility is required to obtain authorization to discharge stormwater to surface water in the state. This requirement applies to all areas of facilities with treatment plants or systems that treat, store, recycle, or reclaim domestic sewage, wastewater or sewage sludge (including dedicated lands for sewage sludge disposal located within the onsite property boundaries) that meet the applicability criteria of above. You have the option of obtaining coverage under the MSGP for direct discharges, (recommended), or obtaining coverage under this individual permit.

6. Request for coverage in individual permit

Are you requesting coverage of stormwater discharges associated with your treatment plant under this individual permit?

☐ Yes ☐ No

If yes, provide a description of stormwater runoff management practices at the site for which you are requesting authorization in this individual wastewater permit and describe whether you intend to comingle this discharge with your treated effluent or discharge it via a separate dedicated storm water outfall. Please also indicate if you intend to divert stormwater to the treatment plant headworks and indirectly discharge it to water in the state. Then stop here.

Note that direct stormwater discharges to waters in the state authorized through this individual permit will require the development and implementation of a stormwater pollution prevention plan (SWPPP) and will be subject to additional monitoring and reporting requirements. Indirect discharges of stormwater via headworks recycling will require compliance with all individual permit requirements including 2-hour peak flow limitations. All stormwater discharge authorization requests will require additional information during the technical review of your application.

f. Other wastes received including sludge from other WWTPs and septic

1. Acceptance of sludge from other WWTP

Does the facility accept or will it accept sludge from other treatment plants at the facility site?

☐ Yes ☒ No

If yes, provide a description of when the plant started accepting sludge or is anticipated to start accepting sludge, an estimate of monthly sludge acceptance (gallons or millions of gallons), an estimate of the BOD_5 concentration of the sludge, and the design BOD_5 concentration of the influent from the collection system. Permits that accept sludge from other wastewater treatment plants may be required to have influent flow and organic loading monitoring. Also note if this information has or has not changed since the last permit action?

2. *Acceptance of septic waste*

Does the facility accept or will accept septic waste at the facility site?

☐ Yes ☒ No

If yes, Does the facility have a Type V processing unit?

☐ Yes ☐ No **If yes**, does the unit have an MSW permit? ☐ Yes ☐ No.

If yes to any of the above, provide a description of when the plant started accepting septic waste, or is anticipated to start accepting septic waste, an estimate of monthly septic waste acceptance (gallons or millions of gallons), an estimate of the BOD_5 concentration of the septic waste, and the design BOD_5 concentration of the influent from the collection system. Permits that accept sludge from other wastewater treatment plants may be required to have influent flow and organic loading monitoring. Also note if this information has or has not changed since the last permit action?

3. *Acceptance of other wastes (not including septic, grease, grit, or RCRA, CERCLA or as discharged by IUs listed in Worksheet 6)*

Does the facility accept or will accept wastes that are not domestic in nature at the facility site excluding the categories listed above?

☐ Yes ☒ No

If yes, provide a description of when the plant started accepting the waste, an estimate how much waste is accepted on a monthly basis (gallons or millions of gallons),and a description of the entities generating the waste, and any distinguishing chemical or other physical characteristic of the waste. Also note if this information has or has not changed since the last permit action?

8. Pollutant Analysis of Treated Effluent

(Instructions, Page 57) See Attachment 9

Provide an analysis of the treated effluent for the following pollutants (data must be sampled within 1 year of application submission) in the table below. Effluent data is not required for new permit applications unless the facility is in operation. For ***water treatment facilities*** discharging filter backwash water, use the second table below.

Table 1.0(5) - Pollutant Analysis for Wastewater Treatment Facilities

Pollutant	Average Conc.	Max Conc.	No. of Samples	Sample Type	Sample Date/Time
$CBOD_5$, mg/l	3.0	25	186	Grab	Jan 2012 - Sep 2015
Total Suspended Solids, mg/l	3.2	29	186	Grab	Jan 2012 - Sep 2015
Ammonia Nitrogen, mg/l	7.1	46	165	Grab	May 2014 - Sep 2015
Nitrate Nitrogen, mg/l	11.0	55	163	Grab	May 2014 - Sep 2015
Total Kjeldahl Nitrogen, mg/l	8.2	46	164	Grab	May 2014 - Sep 2015
Sulfate, mg/l					
Chloride, mg/l					
Total Phosphorus, mg/l					
pH, standard units					
Dissolved Oxygen, mg/l					
Chlorine Residual, mg/l					
E.coli (colonies per 100ml) freshwater					
Entercocci (colonies per 100ml) saltwater	N/A	N/A	N/A	N/A	N/A
Total Dissolved Solids, mg/l					
Electrical Conductivity, µmohs/cm					
Oil & Grease, mg/l					
Alkalinity ($CaCO_3$), mg/l					

Table 1.0(6) - Pollutant Analysis for Water Treatment Facilities

Pollutant	Average Conc.	Max Conc.	No. of Samples	Sample Type	Sample Date/Time
Total Suspended Solids, mg/l					
Total Dissolved Solids, mg/l					
pH, std. units					
Fluoride, mg/l					

Aluminum, mg/l					
Alkalinity ($CaCO_3$), mg/l					

9. Facility Operator

(Instructions, Page 58)

Provide the name, license classification and level, and operator license number for the facility operator:

Professional General Management Services, Inc. No. OC0000011, Curtis Brinkley WW0044842

10. Sewage Sludge Management and Disposal

(Instructions, Page 58) See Attachment 10

a. Sludge disposal method

Check the current and anticipated sludge disposal method or methods. More than one method can be checked.

- ☑ Permitted landfill
- ☑ Permitted or Registered land application site for beneficial use
- ☐ Land application for beneficial use authorized in the wastewater permit
- ☑ Permitted sludge processing facility
- ☐ Marketing and distribution as authorized in the wastewater permit
- ☐ Composting as authorized in the wastewater permit
- ☐ Permitted surface disposal site (sludge monofill)
- ☐ Surface disposal site (sludge monofill) authorized in the wastewater permit
- ☑ Transported to another permitted wastewater treatment plant or permitted sludge processing facility (a current statement or agreement is required, see the item below)
- ☑ Written statement/contractual agreement from the wastewater treatment plant or permitted sludge processing facility accepting the sludge is attached
- ☐ Other method (provide description):

b. Sludge disposal site

Provide the disposal site name: Windemere WWTP

TCEQ permit or registration number: WQ0011931

County where disposal site is located: Travis County

c. Sludge transportation method

Provide the method of transportation (truck, train, pipe, other): Truck

Name of the hauler: Waste Water Transport Service, LLC

Hauler registration number: RN 24343

Transported as: ☒ liquid ☐ semi-liquid ☐ semi-solid ☐ solid

Land application for: ☐ reclamation ☐ soil conditioning

11. Permit Authorization for Sewage Sludge Disposal

(Instructions, Page 58)

a. Beneficial use authorization

Does the existing permit include authorization for land application of sewage sludge for beneficial use?

☐ Yes ☒ No

If yes, are you requesting to continue this authorization to land apply sewage sludge for beneficial use?

☐ Yes ☐ No

If yes, is the completed **Application for Permit for Beneficial Land Use of Sewage Sludge (TCEQ Form No. 10451)** attached to this permit application (see the instructions for details)?

☐ Yes ☐ No

b. Sludge processing authorization

Does the existing permit include authorization for any of the following sludge processing, storage or disposal options?

☐ Yes ■ No Sludge Composting

☐ Yes ■ No Marketing and Distribution of sludge

☐ Yes ■ No Sludge Surface Disposal or Sludge Monofill

☐ Yes ■ No Temporary storage of sludge in sludge lagoons

If yes to any of the above sludge options and the applicant is requesting to continue this authorization, is the completed **Domestic Wastewater Permit Application: Sewage Sludge Technical Report (TCEQ Form No. 10056)** attached to this permit application:

☐ Yes ☐ No

12. Sewage Sludge Solids Management Plan

(Instructions, Page 59)

Does the facility discharge in the Lake Houston watershed?

☐ Yes ■ No

Does the facility accept sludge from other domestic wastewater treatment facilities?

☐ Yes ■ No

If yes to either question, is the required solids management plan attached?

☐ Yes ☐ No

13. Sewage Sludge Lagoons

(Instructions, Page 60) N/A

a. Location information

Indicate by a check mark that the following required maps are submitted as part of the application and that they contain the required information.

☐ Original General Highway (County) Map

☐ USDA Natural Resources Conservation Service Soil Map

☐ Federal Emergency Management Map

☐ Site map

Indicate by a check mark if any of the following exist within the lagoon area.

- ☐ Overlap a designated 100-year frequency flood plain
- ☐ Soils with flooding classification
- ☐ Overlap an unstable area
- ☐ Wetlands
- ☐ Located less than 60 meters from a fault
- ☐ None of these

If a portion of the lagoon(s) is located within the 100-year frequency flood plain, provide the protective measures to be utilized including type and size of protective structures:

b. Temporary storage information

Provide the results of the following in addition to the pollutants in *Item 7 of Technical Report 1.0.*

Additional Pollutant Screening for Sludge Lagoons

Nitrate Nitrogen, mg/kg	
Total Nitrogen, mg/kg	
Phosphorus, mg/kg	
Potassium, mg/kg	
pH (standard units)	
Ammonia Nitrogen mg/kg	
Arsenic	
Cadmium	
Chromium	
Copper	
Lead	
Mercury	
Molybdenum	
Nickel	
Selenium	

Zinc	
Total PCBs	

Provide the following information:

Volume and frequency of sludge to the lagoon(s)__________________________

Total dry tons stored in the lagoons(s) per 365-day period____________________

Total dry tons stored in the lagoons(s) over the life of the unit:________________

c. Liner information

Does the active/proposed sludge lagoon(s) have a liner with a maximum hydraulic conductivity of $1x10^{-7}$ cm/sec?

☐ Yes ☐ No

If yes, describe the liner below. Please note that a liner is required.

d. Site development plan

Provide a detailed description of the methods used to deposit sludge in the lagoon(s):

In addition to the detailed description, please indicate by a check mark that the following information is provided.

- ☐ Plan view and cross-section of the sludge lagoon(s)
- ☐ Copy of the closure plan
- ☐ Copy of deed recordation for the site
- ☐ Size of the sludge lagoon(s) in surface acres and capacity in cubic feet and gallons
- ☐ Description of the method of controlling infiltration of groundwater and surface water from entering the site
- ☐ Procedures to prevent the occurrence of nuisance conditions

e. Groundwater monitoring

Is groundwater monitoring currently conducted at this site, or are any wells available for groundwater monitoring, or are groundwater monitoring data otherwise available for the sludge lagoon(s)?

☐ Yes ☐ No

If groundwater monitoring data are available, provide a copy. Provide a profile of soil types encountered down to the groundwater table and the depth to the shallowest groundwater as a separate attachment.

14. Authorizations/Compliance/Enforcement

(Instructions, Page 62)

a. Additional authorizations

Does the permittee have additional authorizations for this facility, such as reuse authorization, sludge permit, etc?

☐ Yes ☒ No

If yes, provide the TCEQ authorization number and description of the authorization:

b. Permittee enforcement status

Is the permittee currently under enforcement for this facility?

☐ Yes ☒ No

Is the permittee required to meet an implementation schedule for compliance or enforcement?

☐ Yes ☒ No

If yes to either question for item b., provide a brief summary of the enforcement and/or implementation schedule and include a status update:

15. RCRA/CERCLA Wastes

(Instructions, Page 62)

a. RCRA hazardous wastes

Has the facility received in the past three years, does it currently receive, or will it receive RCRA hazardous waste?

☐ Yes ☒ No

b. Remediation activity wastewater

Has the facility received in the past three years, does it currently receive, or will it receive CERCLA wastewater, RCRA remediation/corrective action wastewater or other remediation activity wastewater?

☐ Yes ☒ No

c. Details about wastes received

If yes to either a. or b., is a detailed attachment with information concerning these wastes provided?

☐ Yes ☐ No

16. Laboratory Accreditation

(Instructions, Page 63)

Effective July 1, 2008, all laboratory tests performed must meet the requirements of *30 TAC Chapter 25, Environmental Testing Laboratory Accreditation and Certification,* which includes the following general exemptions from National Environmental Laboratory Accreditation Program (NELAP) certification requirements:

- The laboratory is an in-house laboratory and is:
  - periodically inspected by the TCEQ; or
  - located in another state and is accredited or inspected by that state; or
  - performing work for another company with a unit located in the same site; or
  - performing pro bono work for a governmental agency or charitable organization.
- The laboratory is accredited under federal law.
- The data are needed for emergency-response activities, and a laboratory accredited under the Texas Laboratory Accreditation Program is not available.
- The laboratory supplies data for which the TCEQ does not offer accreditation.

The applicant should review *30 TAC Chapter 25* for specific requirements.

The following certification statement shall be signed and submitted with every application. See the *Signature Page* section in the Instructions, (page 39), for a list of designated representatives who may sign the certification.

CERTIFICATION:

I, Todd Purcell (printed name),
Mayor, City of Dripping Springs (title), certify that all laboratory tests submitted with this application meet the requirements of *30 TAC Chapter 25, Environmental Testing Laboratory Accreditation and Certification.*

[signature]
Signature

10/19/15
Date

DOMESTIC TECHNICAL REPORT 1.1

The following is required for new and amendment applications

1. Permitted or Proposed Flows

(Instructions, Page 64)

a. Complete the following charts.

Table 1.1(1) - Existing/Interim I Phase

Design Flow (MGD)	0.399
2-Hr Peak Flow (MGD)	1.596
Estimated construction start date	August 2019
Estimated waste disposal start date	October 2020

Table 1.1(2) - Interim II Phase

Design Flow (MGD)	0.4975
2-Hr Peak Flow (MGD)	1.990
Estimated construction start date	August 2019
Estimated waste disposal start date	July 2021

Table 1.1 (3) Final Phase

Design Flow (MGD)	0.995
2-Hr Peak Flow (MGD)	3.980
Estimated construction start date	January 2021
Estimated waste disposal start date	October 2021

Current operating phase:______________________________

b. Justification of permit need

Provide a detailed discussion regarding the need for any phase(s) not currently permitted. Failure to provide sufficient justification may result in the Executive Director recommending denial of the proposed phase(s) or permit.

Over the last few years, the City has been receiving numerous new sewer service requests. In response to the requests, the City currently has a permit amendment pending to increase its permitted capacity from 162,500 GPD to 348,500 GPD. This capacity is already 100% reserved for future developments, and the City continues to receive additional requests. A new permit and WWTP is needed to allow for the City to continue to grow and provide sewer service to new and existing customers.

c. Regionalization of facilities

Provide the following information concerning the potential for regionalization of domestic wastewater treatment facilities:

1. *Municipally incorporated areas*

If the applicant is a city, check N/A and proceed to 1(c)(2) below:

☒ N/A

Is any portion of the proposed service area located in an incorporated city?

☐ Yes ☐ No

If yes, within the city limits of:

____

If yes, is correspondence from the city is attached?

☐ Yes ☐ No

If consent to provide service is available from the city, is justification for the proposed facility and a cost analysis of expenditures that includes the cost of connecting to the city versus the cost of the proposed facility or expansion attached?

☐ Yes ☐ No

2. *Utility CCN areas*

Is any portion of the proposed service area located inside another utility's CCN area?

☐ Yes ☒ No

If yes, is justification for the proposed facility and a cost analysis of expenditures that includes the cost of connecting to the CCN facilities versus the cost of the proposed facility or expansion attached?

☐ Yes ☐ No

3. *Nearby collection systems*

Are there any domestic permitted wastewater treatment facilities and/or collection systems located within a three-mile radius of the proposed facility?

☒ Yes ☐ No

If yes, is a list of these facilities that includes the permittee's name and permit number, and an area map showing the location of these facilities attached?

☐ Yes ☒ No

If yes, are copies of your certified letters to these facilities **and** their response letters concerning connection with their system attached?

☐ Yes ☐ No

Does a permitted domestic wastewater treatment facility or a collection system located within three (3) miles of the proposed facility currently have the capacity or is willing to expand to accept the volume of wastewater proposed in this application?

☐ Yes ☒ No

If yes, is an analysis of expenditures required to connect to a permitted wastewater treatment facility or collection system located within 3 miles versus the cost of the proposed facility or expansion attached?

☐ Yes ☐ No

2. Proposed Organic Loading

(Instructions, Page 65)

a. New permits

Is this an application for a new permit?

☒ Yes ☐ No

If yes, proceed to 2(c).

If no, and the application is to amend an existing permit, provide organic loading information in 2(b).

b. Current organic loading

Facility Design Flow (flow being requested in application)

0.995 MGD

Average Influent Organic Strength or BOD5 Concentration in mg/l

277 mg/L

Average Influent Loading (lbs/day = total average flow x average BOD5 conc. X 8.34)

1,200 lb BOD/day

Provide the source of the average organic strength or BOD5 concentration.

City of Dripping Springs Influent Data See Attachment 7

If the increased flow will impact the existing organic strength, the following table must be completed.

c. Proposed organic loading

This table must be completed if applying for a new permit or if increased flow will impact organic loading.

Table 1.1(4) – Design Organic Loading

Source	Total Average Flow (MGD)	Influent BOD_5 Concentration (mg/l)
Municipality		
Subdivision		
Trailer park – transient		
Mobile home park		
School with cafeteria and showers		
School with cafeteria, no showers		
Recreational park, overnight use		
Recreational park, day use		
Office building or factory		
Motel		
Restaurant		
Hospital		
Nursing home		
Other		
TOTAL FLOW		
AVERAGE BOD_5		

3. Proposed Effluent Quality and Proposed Disinfection

(Instructions, Page 66)

Table 1.1(5) – Existing/Interim I Phase Design Effluent Quality

Biochemical Oxygen Demand (5-day), mg/l	5
Total Suspended Solids, mg/l	5
Ammonia Nitrogen, mg/l	2
Total Phosphorus, mg/l	0.5
Dissolved Oxygen, mg/l	5.0
Other:	

Table 1.1(6) – Interim II Phase Design Effluent Quality

Biochemical Oxygen Demand (5-day), mg/l	5
Total Suspended Solids, mg/l	5
Ammonia Nitrogen, mg/l	2
Total Phosphorus, mg/l	0.5
Dissolved Oxygen, mg/l	5.0
Other:	

Table 1.1(7) - Final Phase Design Effluent Quality

Biochemical Oxygen Demand (5-day), mg/l	5
Total Suspended Solids, mg/l	5
Ammonia Nitrogen, mg/l	2
Total Phosphorus, mg/l	0.5
Dissolved Oxygen, mg/l	5.0
Other:	

Check the proposed method of disinfection.

- [x] Chlorine: 1.0 mg/l after 20 minutes detention time at peak flow
- [ ] Ultraviolet: ________ seconds contact time at peak flow
- [ ] Other: ________________________________

Dechlorination process (if applicable): ________________________________

4. Design Calculations

(Instructions, Page 66) See Attachments 7 and 11

☒ **Indicate by a check mark that design calculations and plant features for each proposed phase are provided. Example 4 of the instructions includes sample design calculations and plant features. (Instructions, Page 102)**

5. Facility Site

(Instructions, Page 67)

a. 100-year floodplain

Will the proposed facilities be located above the 100-year frequency flood level?

☒ Yes ☐ No

If no, describe measures used to protect the facility during a flood event. Include a site map showing the location of the treatment plant within the 100-year frequency flood level. If applicable, provide the size and types of protective structures.

Provide the source(s) used to determine 100-year frequency flood plain.

FEMA FIRM Panel No. 48209C0115F

For a new or expansion of a facility, will a wetland or part of a wetland be filled?

☐ Yes ☒ No

If yes, has the applicant applied for a US Corps of Engineers 404 Dredge and Fill Permit?

☐ Yes ☐ No

If yes, provide the permit number:____________________

If no, provide the approximate date you anticipate submitting your application to the Corps:____________________

b. Wind rose See Attachment 12

☒ Indicate by a check mark that a wind rose has been submitted.

6. Permit Authorization for Sewage Sludge Disposal

(Instructions, Page 67)

a. Beneficial use authorization

Are you requesting to include authorization to land apply sewage sludge for beneficial use on property located adjacent to the wastewater treatment facility under the wastewater permit:

☐Yes ☒No

If yes, is the completed Application for Permit for Beneficial Land Use of Sewage Sludge (TCEQ Form No. 10451) attached to this permit application (see the instructions for details):

☐Yes ☐No

b. Sludge processing authorization

Are you requesting to include authorization for any of the following sludge processing, storage or disposal options at the wastewater treatment facility:

☐Yes ☒No	Sludge Composting
☐Yes ☒No	Marketing and Distribution of sludge
☐Yes ☒No	Sludge Surface Disposal or Sludge Monofill

If yes to any of the above sludge options and if the applicant is requesting to continue this authorization, is the completed **DOMESTIC WASTEWATER PERMIT APPLICATION: SEWAGE SLUDGE TECHNICAL REPORT (TCEQ Form No. 10056)** attached to this permit application?

☐Yes ☐No

7. Sewage Sludge Solids Management Plan

(Instructions, Page 67) See Attachment 13

Provide a sewage sludge solids management plan. Indicate by a check mark that it contains the following:

- [x] Treatment units and processes dimensions and capacities
- [x] Solids generated at 100, 75, 50, and 25 percent of design flow
- [x] Mixed liquor suspended solids operating range at design and projected actual flow
- [x] Quantity of solids to be removed and a schedule for solids removal
- [ ] Identification and ownership of the ultimate sludge disposal site
- [ ] For facultative lagoons, design life calculations, monitoring well locations and depths, and the ultimate disposal method for the sludge from the facultative lagoon

An example of a sewage sludge solids management plan has been included as Example 5 of the instructions. **(Instructions, Page 104)**

DOMESTIC TECHNICAL REPORT WORKSHEET 2.0

RECEIVING WATERS

The following is required for all TPDES permit applications

1. Domestic Drinking Water Supply

(Instructions, Page 71)

Is there a surface water intake for domestic drinking water supply located within 5 miles downstream from the point/proposed point of discharge?

☐ Yes ☒ No

☐ **If yes**, identify owner of the drinking water supply, the distance and direction to the intake, and locate and identify the intake on a USGS map. Indicate by a check mark that the requested information is provided.

2. Discharge into Tidally Affected Waters

(Instructions, Page 71)

a. Receiving water outfall

Width of the receiving water at the outfall______________________________feet

b. Oyster waters

Are there oyster waters in the vicinity of the discharge?

☐ Yes ☐ No

If yes, provide the distance and direction from outfall(s).

____

c. Sea grasses

Are there any sea grasses within the vicinity of the point of discharge?

☐ Yes ☐ No

If yes, provide the distance and direction from the outfall(s).

____

3. Classified Segments

(Instructions, Page 71)

Is the discharge directly into (or within 300 feet of) a classified segment?

☐ Yes ■ No

If yes, stop here. Worksheet 2.0 is complete and Worksheet 2.1 is not required.

If no, complete items 4 and 5.

4. Description of Immediate Receiving Waters

(Instructions, Page 71)

Name of the immediate receiving waters:

Walnut Springs Creek

a. Receiving water type

Check the appropriate description of the receiving waters.

- ☑ Stream
- ☐ Freshwater Swamp or Marsh
- ☐ Lake or Pond
  - Surface area:____________________acres
  - Average depth of the entire water body:________________feet
  - Average depth of water body within a 500-foot radius of discharge point:________________feet
- ☐ Man-made Channel or Ditch
- ☐ Open Bay
- ☐ Tidal Stream, Bayou, or Marsh
- ☐ Other:____

b. Flow characteristics

If a stream, man-made channel or ditch was checked above, provide the following. For existing discharges, check one of the following that best characterizes the area **upstream** of the discharge. For new discharges, characterize the area **downstream** of the discharge (check one).

- ☑ Intermittent (dry for at least one week during most years)
- ☐ Intermittent with Perennial Pools (enduring pools with sufficient habitat to maintain significant aquatic life uses)
- ☐ Perennial (normally flowing)

Check the method used to characterize the area upstream (or downstream for new dischargers).

- ☐ USGS flow records
- ☐ Historical observation by adjacent landowner(s)
- ☑ Personal observation
- ☐ Other, specify:____________________________________

c. Downstream perennial confluences

List the name(s) of all perennial streams that join the receiving water within three miles downstream of the discharge point.

Segment 1427 - Onion Creek

d. Downstream characteristics

Do the receiving water characteristics change within three miles downstream of the discharge (e.g., natural or man-made dams, ponds, reservoirs, etc.)?

☑ Yes ☐ No **If yes**, discuss how.

Pools formed by man-made dams on Onion Creek

e. Normal dry weather characteristics

Provide general observations of the water body during normal dry weather conditions.

Observed that Walnut Springs Creek was completely dry. Previously, a trickle of flow was observed in the upper end near the discharge point.

Date and time of observation: 9/30/2015

Was the water body influenced by storm water runoff during observations?

☐ Yes ■ No

5. General Characteristics of the Waterbody

(Instructions, Page 72)

a. Upstream influences

Is the receiving water upstream of the discharge or proposed discharge site influenced by any of the following (check as appropriate)?

- ☐ Oil field activities
- ☑ Urban runoff
- ☐ Upstream discharges
- ☑ Agricultural runoff
- ☑ Septic tanks
- ☐ Other(s), specify below

b. Waterbody uses

Uses of the waterbody, observed or evidences of (check as appropriate).

- ☑ Livestock watering
- ☑ Contact recreation
- ☐ Irrigation withdrawal
- ☐ Non contact recreation
- ☑ Fishing
- ☐ Navigation
- ☐ Domestic water supply
- ☐ Industrial water supply
- ☐ Park activities
- ☐ Other(s), specify below

c. Waterbody aesthetics

Check one of the following that best describes the aesthetics of the receiving water and the surrounding area.

- ☐ Wilderness: outstanding natural beauty; usually wooded or unpastured area; water clarity exceptional
- ☑ Natural Area: trees and/or native vegetation common; some development evident (from fields, pastures, dwellings); water clarity discolored
- ☐ Common Setting: not offensive; developed but uncluttered; water may be colored or turbid
- ☐ Offensive: stream does not enhance aesthetics; cluttered; highly developed; dumping areas; water discolored

DOMESTIC WORKSHEET 6.0

INDUSTRIAL WASTE CONTRIBUTION

1. All POTWs

(Instructions, Page 96)

a. Industrial users

Provide the number of each of the following types of industrial users (IUs) that discharge to your POTW and the daily flows from each. See Definitions for Categorical IUs, Significant IUs – non-categorical, and Other IUs.

Table 6.0(1) – POTW Industrial Users

Type of Industrial User	Number of Industrial Users	Average Daily Flows (MGD)
Categorical IUs	0	0
Significant IUs – non-categorical	0	0
Other IUs	0	0

b. Treatment plant interference

In the past three years, has your POTW experienced treatment plant interference as defined in the Definitions section of the instructions?

☐ Yes ☒ No

If yes, identify all dates, duration, description of interference, probable cause(s) and possible source(s) of each interference event. Include the names of the IUs that may have caused the interference. Submit an attachment if necessary.

c. Treatment Plant pass through

In the past three years, has your POTW experienced pass through as defined in the Definitions section of the instructions?

☐ Yes ☒ No

If yes, identify all dates, duration, description of pollutants passing through the treatment plant, probable cause(s) and possible source(s) of each pass through event. Include the names of the IUs that may have caused pass through. Submit an attachment if necessary.

d. Pretreatment program

Does your POTW have an approved pretreatment program?

☐ Yes ■ No

If yes, answer all questions in item 2, but skip item 3 questions.

Is your POTW required to develop an approved pretreatment program?

☐ Yes ■ No

If yes, answer questions in item 2.c. and 2.d., but skip item 3 questions.

If no to either question above, skip item 2 and answer all questions in item 3 for each significant industrial user and categorical industrial user.

2. POTWs with Approved Programs or Those Required to Develop a Program

(Instructions, Page 96)

a. Substantial modifications

Have there been any **substantial modifications** to the POTW's approved pretreatment program that have not been submitted to the Approval Authority (TCEQ) for approval according to *40 CFR §403.18*?

☐ Yes ☐ No

If yes, identify below modifications that have not been submitted to the Approval Authority (TCEQ), including the purpose of the modification. Submit an attachment if necessary.

b. Non-substantial modifications

Have there been any **non-substantial modifications** to the POTW's approved pretreatment program that have not been submitted to the Approval Authority (TCEQ) for review and acceptance?

☐ Yes ☐ No

If yes, identify below all nonsubstantial modifications that have not been submitted to the Approval Authority (TCEQ) including the purpose of the modification. Submit an attachment if necessary.

c. Effluent parameters above the MAL

List all parameters measured above the MAL in the POTW's effluent monitoring during the last three years. Submit an attachment if necessary.

Table 6.0(2) – Parameters Above the MAL

Pollutant	Concentration	MAL	Units	Date

c. Industrial user interruptions

Has any SIU, CIU, or other IU caused or contributed to any problems (excluding interferences or pass throughs) at your POTW in the past three years?

☐ Yes ☐ No

If yes, identify the industry, describe each episode, including dates, duration, description of problems, and probable pollutants. Submit an attachment if necessary.

3. Significant Industrial User (SIU) Information and Categorical Industrial User (CIU)

(Instructions, Page 97)

a. General information

Company Name: None ______ SIC Code: ______

Telephone number: ______ Fax number: ______

Contact name: ______

Street No.: ______ Street name: ______ Street type: ______

City: ______ State: ______ Zip Code: ______

b. Process information

Describe the industrial processes or other activities that affect or contribute to the SIU(s) or CIU(s) discharge (i.e., process and non-process wastewater).

c. Product and service information

Provide a description of the principal product(s) or services performed.

d. Flow rate information

Table 6.0(3) –Industrial Users Flow Information

Flow information	Discharge (gallons per day)	Specify if continuous, batch, or intermittent discharge
Process wastewater*		
Non-process wastewater*		

*See Definitions of process and non-process wastewater

e. Pretreatment standards

Indicate whether the SIU or CIU is subject to the following.

Technically based local limits as defined in the *Definitions* section of the Instructions:

☐Yes ☐No

Categorical pretreatment standards (*40 CFR Parts 405-471*):

☐Yes ☐No

If subject to categorical pretreatment standards, indicate the applicable category and subcategory for each categorical process.

Table 6.0(4) –Categorical Pretreatment Standards

40 CFR Category	40 CFR Subcategory	40 CFR Subcategory	40 CFR Subcategory	40 CFR Subcategory

f. Industrial unit interruptions

Has the SIU or CIU caused or contributed to any problems (e.g., interferences, pass through odors, corrosion, blockages) at your POTW in the past three years?

☐Yes ☐No

If yes, identify the SIU, describe each episode, including dates, duration, description of problems, and probable pollutants. Provide a separate attachment if necessary.

SPIF Attachments

1. SPIF - USGS Topographic Map, 1 mile Downstream and Location Map (Page 19 of 23)

Attachment List

1. USGS Topographic Map, 3 miles Downstream (Page 14 of 23)
2. WWTP Property Boundary Map and List of Property Owners (Pages 21 & 22 of 23)
3. Buffer Zone Map (Pages 21 & 23 of 23)
4. Property Boundary Map One Mile Downstream of Discharge Point and List of Property Owners (Pages 21 & 22 of 23)
5. Photographs of WWTP Site and Discharge Point (Page 23 of 23)
6. Treatment Process Description (Page 2 of 76)
7. Preliminary Engineering Report With Technical Memorandum 1 - Conceptual Design Services (Pages 2, 3, 23, and 25 of 76)
8. Site Drawing and Service Area (Page 3 of 76)
9. Pollutant Analysis of Treated Effluent (Page 11 of 76)
10. Sludge Disposal/Coupland Recovery System Letter (Page 12 of 76)
11. Treatment Plant Features (Page 25 of 76)
12. Wind Rose (Page 26 of 76)

CITY OF DRIPPING SPRINGS
ADJACENT LAND OWNERS INFORMATION

1. Howard Integerity LTD
   23255 W FM 150
   Driftwood, TX 78619

2. Volpe, Joseph B
   101 Oak Springs Rd
   Dripping Springs, TX 78620

3. Delamarter, Phil & Linda
   100 Oak Springs Rd
   Dripping Springs, TX 78620

4. Delamarter, Phil & Linda
   100 Oak Springs Rd
   Dripping Springs, TX 78620

5. Dripping Springs City Of
   511 Mercer St.
   Dripping Springs, TX

6. Dripping Springs City Of
   511 Mercer St.
   Dripping Springs, TX

7. UMARI Partners LP
   509A W Lynn St.
   Austin, TX 78703

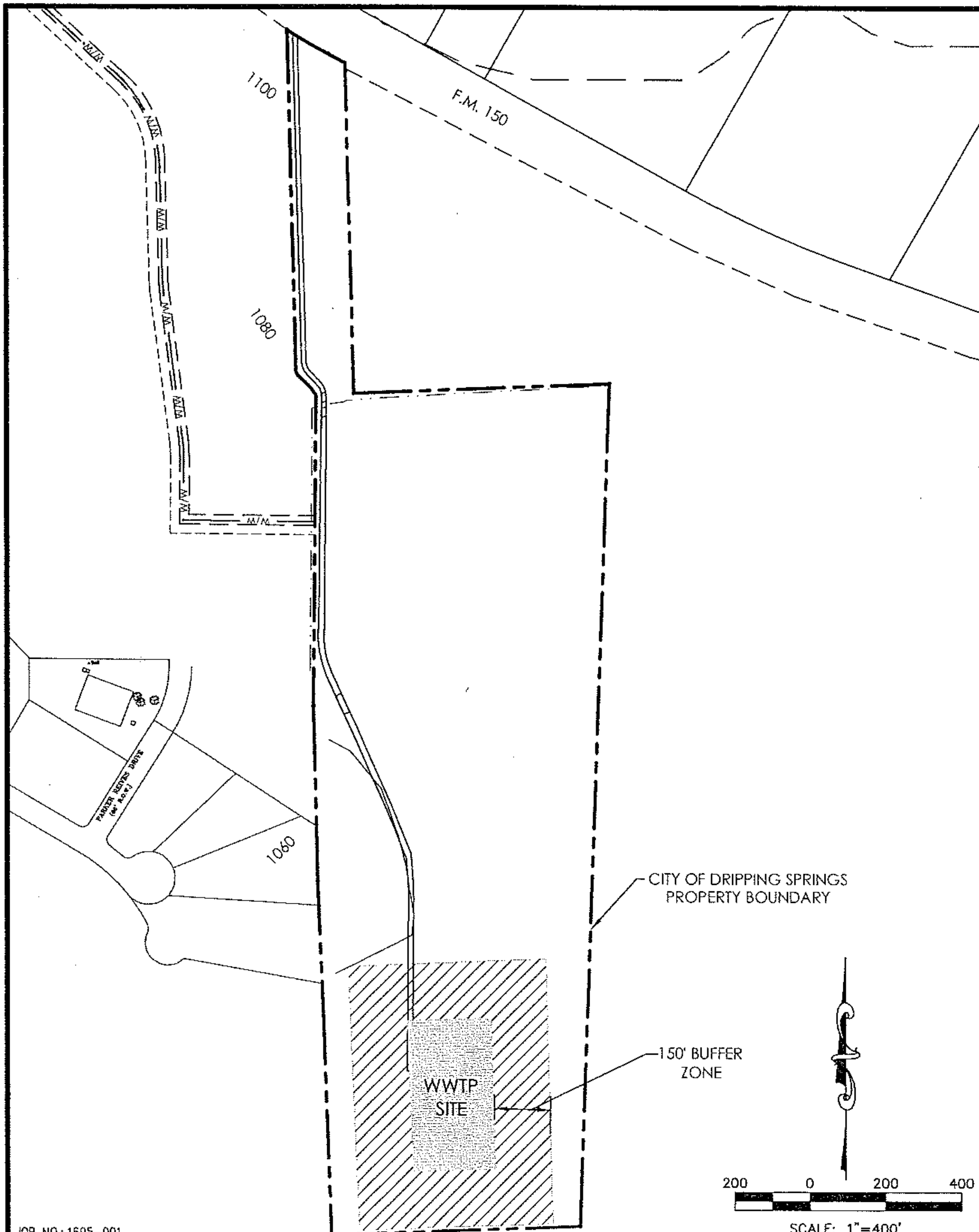
8. Silcox Daniel A & Karen K
   1898 Trebled Waters Trl
   Driftwood, TX 78619

9. KWCC LLC
   503 Drury Ln
   Austin, TX 78737

10. Hilleque Scott & Rebecca
    1889 Trebled Waters Trl
    Driftwood, TX 78619

11. Development Solutions CAT LLC
    12222 Merit Dr Ste 1020
    Dallas, TX 75251

12. Penn, David Cauthon
    3616 Far West Blvd. #117-205
    Austin, TX 78731



CMA ENGINEERING, INC.
235 LEDGE STONE DRIVE
AUSTIN, TEXAS 78737
(512) 432-1000 Fax: (512) 432-1015
Registration # F-3053

DRIPPING SPRINGS WWTP
BUFFER ZONE

ATTACHMENT
3

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CITY OF DRIPPING SPRINGS
ADJACENT LAND OWNERS INFORMATION

1. Howard Integerity LTD
   23255 W FM 150
   Driftwood, TX 78619

2. Volpe, Joseph B
   101 Oak Springs Rd
   Dripping Springs, TX 78620

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   Dripping Springs, TX 78620

4. Delamarter, Phil & Linda
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   Dripping Springs, TX 78620

5. Dripping Springs City Of
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   Dripping Springs, TX

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   511 Mercer St.
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   1898 Trebled Waters Trl
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9. KWCC LLC
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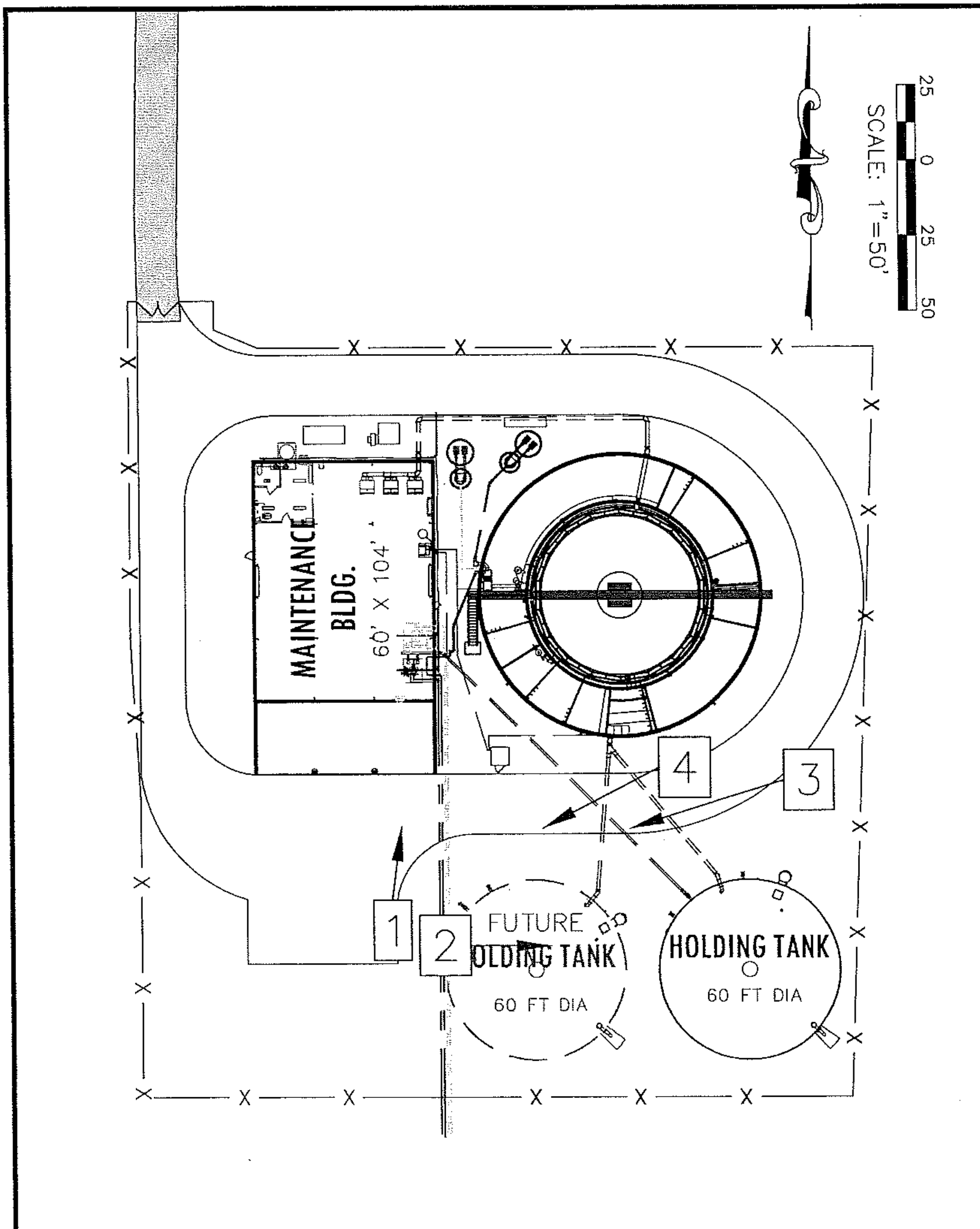
    Dallas, TX 75251

12. Penn, David Cauthon
    3616 Far West Blvd. #117-205
    Austin, TX 78731



JOB NO.: 1695-001

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235 LEDGE STONE DRIVE
AUSTIN, TEXAS 78737
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Registration # F-3053

HAYS COUNTY
CITY OF DRIPPING SPRINGS
PHOTO LOCATION MAP - WWTP

ATTACHMENT
5

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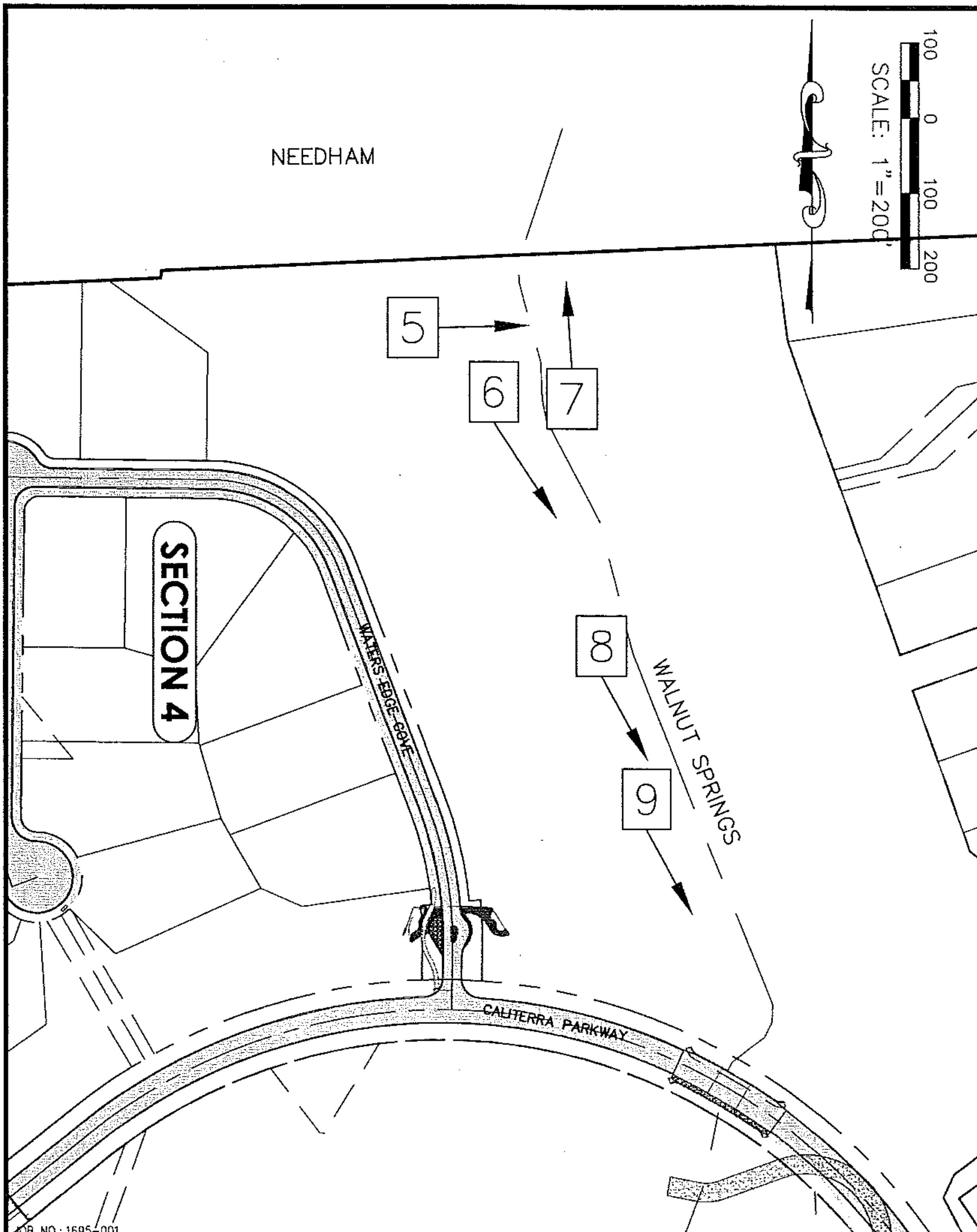

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Registration # F-3053

HAYS COUNTY
CITY OF DRIPPING SPRINGS
PHOTO LOCATION MAP - DISCHARGE POINT

ATTACHMENT 5

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Attachment 5

Photographs of WWTP Site and Discharge Point

Picture 1 - Looking North at WWTP, Chlorination Building, and Operations Barn (11-12-15).

Picture 2 - Looking East at Effluent Holding Tank (11-12-15).

Picture 3 - Looking Southwest at Future WWTP and Effluent Holding Tank Location (11-12-15).

Picture 4 - Looking Southwest at Future WWTP and Effluent Filter Location (11-12-15).

Picture 5 - Looking East at Proposed Discharge Point (11-13-15).

Picture 6 - Looking South along Walnut Springs from Proposed Discharge Point (11-13-15).

Picture 7 - Looking North and Upstream along Walnut Springs from Proposed Discharge Point (11-13-15).

Picture 8 - Looking South along Walnut Springs (11-13-15).

Picture 9 - Looking South along Walnut Springs (11-13-15).

Attachment 6

Treatment Process Description

The Interim I and Interim II Phase WWTP will be a four-stage Bardenpho activated sludge treatment system with conventional clarification and tertiary filtration followed by chlorine disinfection and will incorporate external carbon addition. Wastewater will pass through self-cleaning mechanical bar screens and enter the first anoxic basin, flow to the first aerobic basin, then to the second anoxic basin, and then to the second aerobic basin. Activated Sludge will flow from the second aerobic basin to the clarifier, then to the effluent filters, then to the chlorine contact chamber, and finally to the treated effluent tank. Treated effluent will be s stored in the holding tank prior to reuse or discharge. The WWTP will include a treated effluent pump station that will deliver treated water to the discharge point through a 12 in treated effluent line.

The Final Phase WWTP will include flow splitting and two identical four-stage Bardenpho activated sludge treatment systems with conventional clarification and tertiary filtration followed by chlorine disinfection and will incorporate external carbon addition.

It is anticipated that sludge will be hauled off-site, by a licensed hauler, to another permitted WWTP in the initial phases, and potentially dewatered onsite in future phases.

Preliminary Engineering Report for

City of Dripping Springs

Hays County, Texas

South Regional Wastewater System Expansion
New TPDES Permit Application

Prepared for:

City of Dripping Springs
P.O. Box 384
Dripping Springs, Texas 78620

STATE OF TEXAS
ROBERT PAUL CALLEGARI
68913
LICENSED
PROFESSIONAL ENGINEER

10-19-15

TBPE Firm Registration Number F-3053

CMA No: 1695-001

TABLE OF CONTENTS

LIST OF TABLES AND FIGURES

CITY OF DRIPPING SPRINGS
SOUTH REGIONAL WASTEWATER SYSTEM
HAYS COUNTY, TEXAS
WASTEWATER SYSTEM EXPNASION
PRELIMINARY ENGINEERING REPORT
NEW PERMIT APPLICATION

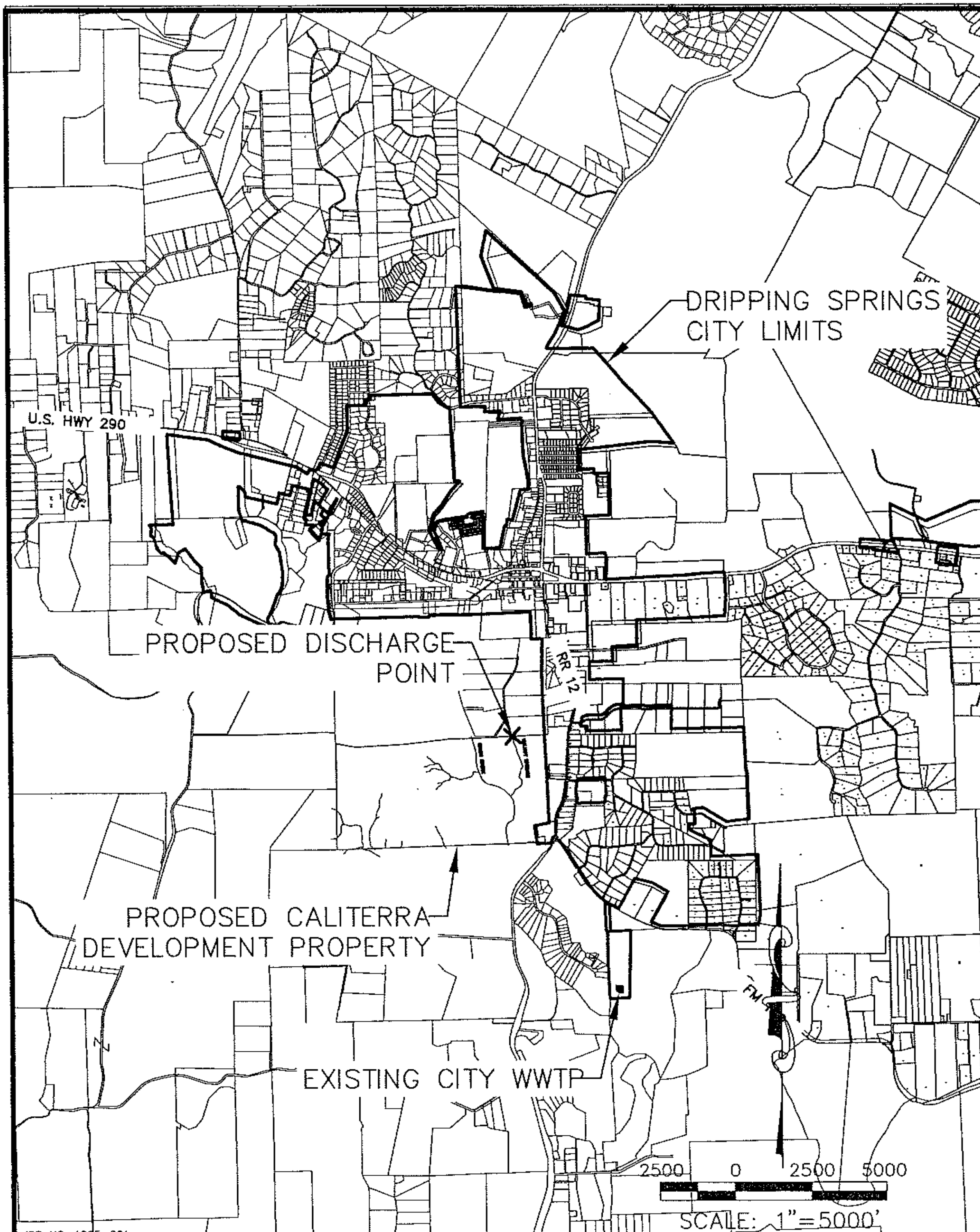
1.0 INTRODUCTION

The City of Dripping Springs (City) is pursuing a new Texas Pollutant Discharge Elimination System (TPDES) Permit Amendment for the expansion of it South Regional Wastewater System. The purpose of the new permit is to increase capacity of the City's South Regional Wastewater System and change its method of effluent disposal to accommodate growth in the Dripping Springs area. It's existing permitted capacity is 162,500 GPD via subsurface land application permit (TCEQ Permit Number WQ0014488001), and has an amendment pending to increase capacity via surface irrigation to 348,500 GPD. The City proposes to construct a new WWTP and increase the capacity of its existing WWTP, abandon the subsurface drip irrigation requirement from their existing permit, and convert the surface irrigation areas in the permit pending at the TCEQ to 30 TAC, Chapter 210 reuse, and discharge treated effluent to Walnut Springs, a tributary to Onion Creek.

The City is continuing to receive requests and inquiries for wastewater service within and outside of its existing service area. These include requests from developers of several large tracts located outside the existing service area that have obtained or are pursuing their own wastewater permits for onsite treatment and land application.

Additionally, the City will pursue Beneficial Reuse Authorization through 30 TAC, Chapter 210, which would allow the City to reuse treated effluent for irrigation on City-owned park lands and athletic fields, and potential irrigation of other privately owned areas (i.e., parks, greenbelts, pasture lands, etc.) to conserve treated surface water and/or groundwater resources. The City-owned park land and athletic fields, and other parks in the area currently utilize treated surface water from the West Travis County Public Utility Agency (WTCPUA) and groundwater from the Drippings Springs Water Supply Corporation (DSWSC) potable water systems. Other future reuses could be Direct Potable Reuse to supplement the existing treated surface water and/or groundwater supplies.

The City's existing South Regional Wastewater Treatment Plant is located along FM 150 approximately 0.55 miles east of Ranch Road 12 in Dripping Springs, Texas. The proposed discharge point is within the Caliterra Development located along the west side of Ranch Road 12 ("RR12") approximately 1.5 miles south of U.S. Highway 290, and immediately northwest of the Ranch Road 150 and Ranch Road 12 intersection in Dripping Springs, Texas (see Figure 1 for a Vicinity Map). The proposed WWTP would be located at the existing WWTP site.



CMA ENGINEERING, INC. 235 LEDGE STONE DRIVE AUSTIN, TEXAS 78737 (512) 432-1000 Fax: (512) 432-1015 Registration # F-3053	CITY OF DRIPPING SPRINGS SOUTH REGIONAL WASTEWATER SYSTEM VICINITY MAP	FIGURE 1

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2.0 PROPOSED HYDRAULIC AND ORGANIC WASTEWATER LOADINGS

2.1 Estimated Flows and Permit Phases

Flow projections from the CMA Engineering, Inc. (CMA) July 2013 Preliminary Engineering Planning Report for South Regional Wastewater System Expansion Planning were updated and used to establish phasing for the permit amendment application. The City proposes to utilize new outfall (a tributary to Onion Creek) in the Caliterra Subdivision. The proposed permit will allow the City to provide wastewater service to the proposed Caliterra development and the Greater City of Dripping Springs Area.

A wastewater production rate of 175 GPD/LUE was used to establish capacity requirements for the City's wastewater treatment and disposal facilities. CMA Engineering, Inc. has found that the 175 GPD/LUE is typical of other residential subdivisions in the Dripping Springs area. Table 1 presents the summary of the estimated wastewater flow projections. Figure 2 is a Graph of the Wastewater Flow Projections.

The City is proposing three permit phases. The proposed Interim I Phase is 0.399 MGD and allows the City of operate the new WWTP in accordance with 30 TAC, Chapter 217.153(c) that requires that WWTPs over 0.400 MGD to have two aeration basins and two clarifiers for redundancy. This will allow the City to continue to grow while the existing WWTP is being retrofitted. The proposed Interim II Phase is 0.4975 MGD. If needed, it is hopeful that the TCEQ will grant the City a variance to 30 TAC, Chapter 217.153(c) during the retrofit of the existing WWTP allow the City to continue to keep growing. The proposed Final Phase is 0.995 MGD. Based on the conceptual design of the WWTP performed by Carollo Engineers (Carollo), the existing WWTP can be converted to a Biological Nutrient Removal (BNR) WWTP at the proposed permit phase capacities and meet the proposed effluent parameters. The Conceptual Design Engineering Report is included in Appendix A. The proposed permit phases are summarized below.

Interim I Phase:	0.399 MGD
Interim II Phase:	0.4975 MGD
Final Phase:	0.995 MGD

2.2 Peak Flow Rate

The peak flow to the WWTP is defined as the highest two-hour average flow rate expected to be delivered to the treatment units under any operational condition. It is proposed that influent flows will gravity flow to the WWTP influent lift stations, and then pumped from lift stations to the WWTP headworks. The peak factor used for the preliminary design of the WWTP is 4.0.

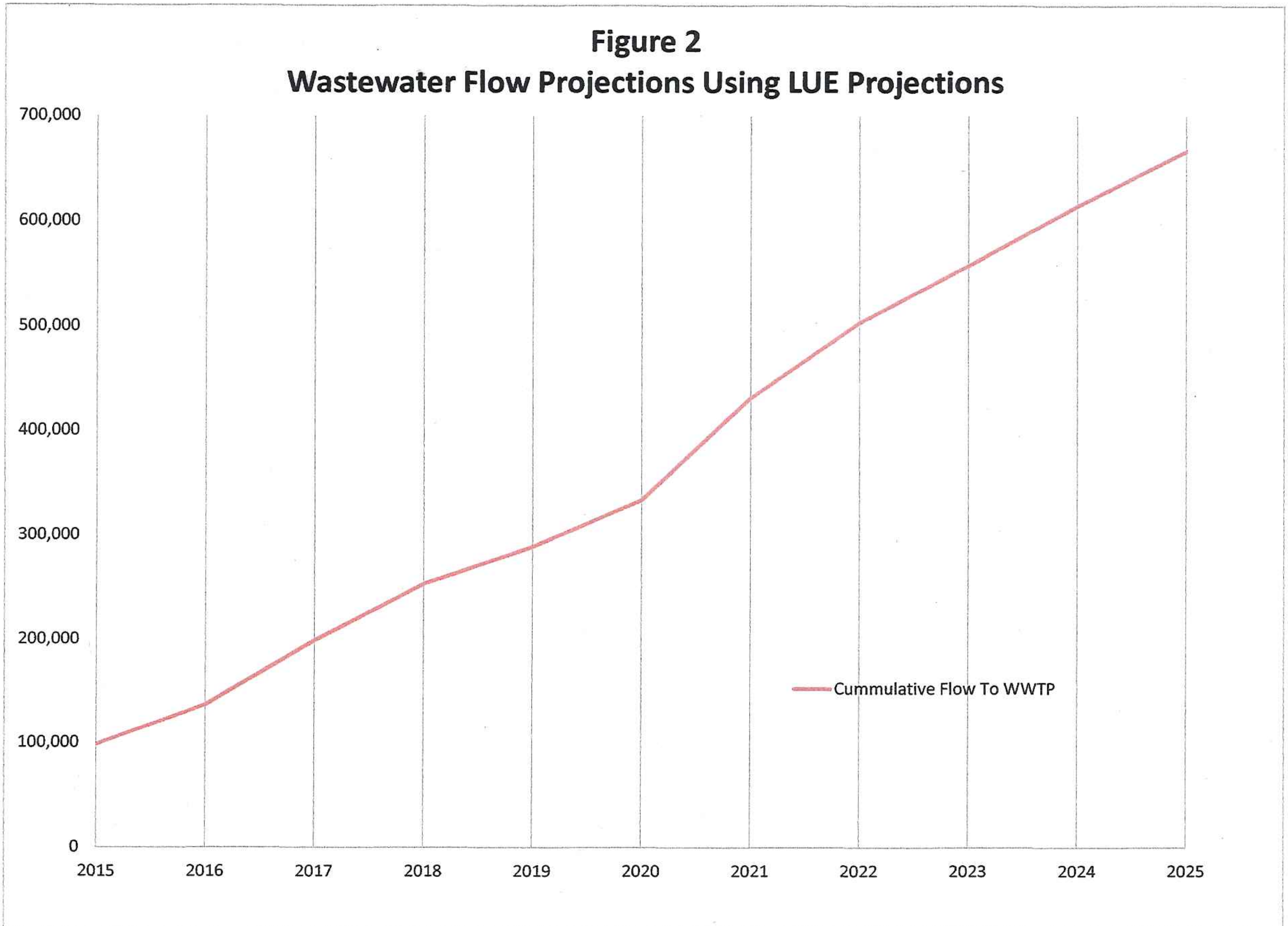
Table 1
Wastewater Flow and Growth Projections
City of Dripping Springs

Revised October 19, 2015

GROWTH AREA	LUE PROJECTION - by Year											Area Total
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
Arrowhead Ranch							250	50	50	50	50	450
Barshop & Oles Tracts	3	3										6
Burrows MF/The Retreat @ DS	15	18	30	13								76
Calilterra	30	90	100	100	100	80	80	75	20			675
Cannon Tract								50	50	50	50	200
Carter Ranch			25	50	50	50	50	10				235
Creek Road							5	5	5	5	5	25
Downtown Area						5						5
DS Presbyterian	3											3
DSISD - MS								35				35
Garnett Tract							25	25	25	25	10	110
Harrision Tract								5	5			10
Haydon Tract							10	10	10	10		40
Hibberd Tracts							35	35	35	35	35	175
Hidden Springs MF								5	5			10
Holiday Inn Express		35										35
Howard Tract		20	20									40
HWY 290 - East						5	5	5	5	5	5	30
HWY 290 - Mid West						10	10	10	10	10	10	60
HWY 290 - W Central						5	2	2	2	2	2	15
Karhan Tract							7	8	8			23
Founder's Ridge/Linwood	70		70	65								205
McAllister/Meritage/Heritage	34	40	33	33								140
Merit Hill Country Senior Living			30									30
Polkinghorn		1										1
RR 12 - N							2	2	2	2	2	10
RR 12 - S							5	5	5	5	5	25
Slaughter Ranch										50	50	100
SPP/Heritage PID			50	50	50	100	75	75	75	75	75	625
Twisted X Tract	7	8										15
	162	215	358	311	200	255	561	412	312	324	299	
	162	377	735	1,046	1,246	1,501	2,062	2,474	2,786	3,110	3,409	
	98,350	135,975	198,625	253,050	288,050	332,675	430,850	502,950	557,550	614,250	666,575	
	127,500	127,500	189,500	313,500	313,500	399,000	497,500	995,000	995,000	995,000	995,000	

Current WWTP Flow	70,000
GPD/LUE	175

Total of LUEs Projected by End of 2025 **3409**



N:\1695 City of DS Permit 2\Eng Report\LUE and Growth Projections.xlsx,Figure 2 - Flow (LUEs) For Perm

2.3 Proposed Organic Loadings

Carollo performed an influent loading analysis for the BOD_5, TKN, ammonia, and total phosphorus (TP) as part of the Conceptual Design Engineering Report (included in Appendix A). TSS data was not available, but Carollo estimated TSS influent concentrations were estimated to be about 10 % higher than the calculated BOD_5 influent concentrations. A summary of the influent organic and nutrient loadings for each phase are presented below:

Interim I Phase

- 510 pounds of BOD_5/day
- 560 pounds of TSS/day
- 120 pounds of TKN/day
- 87 pounds of ammonia/day
- 15.5 pounds of TP/day

Interim II Phase

- 600 pounds of BOD_5/day
- 660 pounds of TSS/day
- 140 pounds of TKN/day
- 100 pounds of ammonia/day
- 18.2 pounds of TP/day

Final Phase

- 1,200 pounds of BOD_5/day
- 1,320 pounds of TSS/day
- 280 pounds of TKN/day
- 200 pounds of ammonia/day
- 36.5 pounds of TP/day

2.4 Proposed Effluent Quality

The City is proposing to discharge treated effluent into Walnut Springs, a tributary to Onion Creek. The proposed effluent limits are as follows:

- 5 mg/L $CBOD_5$
- 5 mg/L TSS
- 2 mg/L Ammonia Nitrogen
- 0.5 mg/L Total Phosphorus
- E Coli Bacteria - 126 colonies per 100 ml
- 5 mg/L Dissolved Oxygen

- pH shall not be less than 6.0 standard units nor greater than 9.0 standard units
- The effluent shall contain a chlorine residual of at least 1.0 mg/L after a detention time of 20 minutes (based on peak flow)

In addition, the following requirements for Type I effluent will apply to Beneficial Reuse authorized under Chapter 210 of the TCEQ Rules:

- BOD_5 or $CBOD_5$- 5 mg/L
- Turbidity - 3 NTU
- Fecal Coliform - 20 CFU/100 ml (geometric mean)
- Fecal Coliform - 75 CFU/100 ml (single grab sample)
- Enterococci – 4 CFU/ml (30-day geometric mean)
- Enterococci – 9 CFU/ml (maximum grab sample)
- The effluent shall be re-chlorinated prior to reuse

2.5 Wastewater Treatment Plant Design

The City's existing WWTP is a field-erected steel activated sludge WWTP with a potential total treatment capacity of approximately 500,000 GPD. The concentric steel bulls-eye WWTP structure has an outer diameter of approximately 94 feet and an inner diameter of approximately 62 feet, and has 18.5 feet tall walls with stairways, walk ways and grating, and other equipment. However, the existing equipment at the WWTP currently in operation limits the plant capacity to 127,500 GPD. As such, there are several basins within the structure that are not being used at this time. The existing WWTP consists of one aeration basin, clarifier, chlorine contact chamber, and two digester basins. Based on the Conceptual Design Engineering Report developed by Carollo (included in Appendix A), the existing WWTP can be converted to a BNR WWTP with a capacity of 497,500 GPD. Please refer to Appendix A for preliminary design. It is planned that a new identical WWTP will be constructed in the interim I Phase, and that the existing WWTP be converted to a BNR WWTP after the new proposed WWTP is constructed and in operation.

The disinfection for each phase of the permit will include chlorination of the treated wastewater prior to discharge. The treated effluent will be chlorinated in a chlorine contact chamber to a chlorine residual of 1.0 mg/L with a minimum detention time of 20 minutes at peak flow. Effluent will also be re-chlorinated prior to reuse.

Digesters will be used to partially stabilize sludge prior to land fill disposal and/or transporting the sludge to another WWTP or sludge treatment facility for further processing and ultimate disposal. The City's existing WWTP utilizes auxiliary power at the WWTP site, and at lift stations that do not meet the requirements of a reliable power supply as described in 30 TAC, Chapter 217.

2.6 WWTP and Discharge Site

The existing WWTP site and proposed discharge location are within the Barton Springs Zone of the Onion Creek watershed. No portion of the project site is in the Edwards Aquifer Recharge Zone as mapped by the TCEQ. However, the project is located within the Barton Springs Contributing Zone of the Edwards Aquifer region.

The existing WWTP is outside of and protected from the 100 year flood plain as delineated by FEMA, and the 150 foot buffer zones around the existing WWTP are owned by the City. All WWTP siting requirements of 30 TAC, Chapter 309 are met.

3.0 DISCHARGE ROUTE

Treated effluent will be pumped from the WWTP site through a 12 inch PVC line to the proposed discharge point within the Caliterra Subdivision. At the discharge point, a concrete and rock structure/waterfall or other reaeration structure will be constructed so that effluent is re-aerated before entering the tributary. Treated effluent will flow through the reaeration structure, and be discharged to Walnut Springs, thence to Onion Creek in Segment 1427 of the Colorado River Basin.

APPENDIX A

CITY OF DRIPPING SPRINGS

SOUTH REGIONAL WASTEWATER TREATMENT PLANT

TECHNICAL MEMORANDUM NO. 1
CONCEPTUAL DESIGN SERVICES
BY CAROLLO ENGINEERS, INC.

CITY OF DRIPPING SPRINGS
SOUTH REGIONAL WASTEWATER TREATMENT FACILITY

TECHNICAL MEMORANDUM
NO. 1
CONCEPTUAL DESIGN SERVICES

PREPARED FOR CMA ENGINEERING, INC.

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CONCEPTUAL DESIGN SERVICES

1.0 BACKGROUND

The City of Dripping Springs is located in Hays County, Texas, twenty-five miles southwest of the State capital, Austin. The Austin metropolitan area is one of the fastest growing metropolitan areas in the nation (U.S. Census Bureau, 2014a). In addition, the U.S. Census Bureau ranked Hays County as the 14th fastest growing county in the U.S with a population increase of twelve percent between 2010 and 2013 (U.S. Census Bureau, 2014b).

The City of Dripping Springs recently completed a Direct Potable Reuse (DPR) Feasibility Study (Study) in April 2015 (Carollo Engineers, 2015). As part of the study, and as a requirement for DPR, alternative means for temporary effluent reuse and/or disposal were investigated for events when treated effluent cannot be reused for DPR purposes. One alternative means for effluent disposal identified in this study involves discharging highly treated effluent into Onion Creek which is part of the Colorado River surface water system. It is the City's intent to also utilize 30 TAC, Chapter 210 Reuse Authorization to utilize treated effluent for irrigation on City-owned park lands and athletic fields, and potential irrigation of other privately owned areas (i.e., parks, greenbelts, pasture lands, etc.), and for construction water.

The South Regional Wastewater Treatment Facility (SR WWTF) currently disposes of effluent by drip irrigation on-site under the existing 162,500 gallons per day (gpd) Texas land application permit (TLAP) issued by the Texas Commission on Environmental Quality (TCEQ). A pending amendment to the existing TLAP permit includes plans to implement a WWTP expansion and tertiary treatment via cloth-media filters at the SR WWTF, and to expand the land application practices with spray irrigation at the new Caliterra development to increase its treatment and disposal capacity. The DPR Feasibility Study identified that the existing land application sites do not have sufficient capacity for the anticipated flows based on population growth and new residential developments projected in the greater City of Dripping Springs service area. The SR WWTF is currently rated for 127,500 gpd.

The Study identified a roadmap to meet effluent nutrient goals by upgrading the existing treatment facility. The Study indicated that the next steps for the implementation of a DPR project require the conversion of the SR WWTF to include BNR treatment. This Technical Memorandum (TM) summarizes the conceptual design development for the BNR Improvements at the SR WWTF.

2.0 STUDY OBJECTIVES

The objective of this study is to develop a conceptual design for implementing BNR treatment at the SR WWTF. This involves the following specific goals:

1. Assess existing plant capacity and future process requirements for plant expansion to meet anticipated nutrient discharge requirements and projected design flows.
2. Develop a conceptual design for BNR treatment at the SR WWTF that is in accordance with 30 TAC, Chapter 217 design criteria requirements.
3. Summarize WWTP improvement requirements and provide recommendations to proceed with implementing the Project.

3.0 CURRENT AND ANTICIPATED FLOWS AND LOADS

3.1 Current and Projected Plant Influent Flows

Per Texas Administrative Code (TAC) §217.34(1)(B), five years of historical plant flow data should be used to determine the annual average flow, maximum monthly average flow, peak flow and ratio of maximum monthly average flow to annual average flow, and the ratio of the peak flow to the annual average flow.

In accordance with reporting requirements, the SR WWTF monitors effluent flows on 5 days per week. Flow data was not consistently available for the last 5 years (see Figure A.1 in Appendix A), therefore the required peaking factors suggested by TCEQ were adopted for the design (Table 1.1). Based on the flow data available from 2014 (January through August), the current average daily annual flow (AADF) is estimated to be approximately 63,650 gpd and the current Average Daily Maximum Month Flow (ADMMF) is estimated to be 92,590 gpd.

The requested design capacity under the Interim I Phase BNR conversion is 399,000 gpd ADMMF. The design capacity under the Interim II Phase is 497,500 gpd ADMMF. This is the maximum treatment capacity of the existing facilities with a single train under the newly anticipated permit limits for nitrogen and phosphorus (see Section 4). The Final Phase is evaluated for a capacity of 995,000 gpd ADMMF, which is twice the capacity under the Interim II Phase as the existing treatment train.

Due to a current lack of treatment redundancy, it is difficult to take the existing plant out of service to make the necessary retrofits for a BNR conversion. The phasing proposed will therefore be accomplished by constructing a new train in parallel to the current existing treatment train. This new train will be used to meet Interim Phase I and Interim Phase II requirements. For the Final Phase, the existing treatment train will be retrofitted to match the new BNR train, resulting in two identical parallel trains. This capacity evaluation is presented in further detail in Section 9 of this report. The design flows for each Phase are summarized in Table 1.1.

Table 1.1 Wastewater Influent Flows and Flow Peaking Factors City of Dripping Springs Conceptual BNR Design CMA Engineering, Inc.

	Existing Flows	Future Flows		
	(Jan to Aug 2014)(1)	Interim I Phase	Interim II Phase	Final Phase
Influent Flows				
Average Annual Daily Flow (AADF), gpd(2)	63,650	266,000	331,670	663,300
Permitted Maximum 30-day Average Flow (ADMMF), gpd	92,590	399,000	497,500	995,000
Peak Day Flow (PDF), gpd	146,800	611,800	762,840	1,525,600
Instantaneous peak 2-hour flow (P2HF), gpd	NA	1,596,000	1,990,000	3,980,000
Flow Peaking Factors				
ADMMF / AADF	1.45		1.5(3)	
PDF / AADF	2.3		2.3	
P2HF/ ADMMF	NA		4(4)	

Notes:
(1) Based on effluent flow records from January through August 2014.
(2) Design flow - equivalent to "Average Daily Flow" per permit.
(3) For a facility less than 1.0 mgd the permitted flow is the maximum 30-day average flow estimated by multiplying the average annual flow by a factor of at least 1.5 [§217.32(a)(1)(B)].
(4) As site-specific data was unavailable for spreadsheet analysis , the instantaneous peak two-hour flow was estimated by multiplying the permitted flow by a factor of 4.0 (§217.32(a)(2)].

The flow projections account for additional wastewater production in the service area associated with new developments that are currently in planning as well as general population growth in the service area. It is estimated that the Caliterra development will generate approximately 118,000 gpd ADMMF of additional flow and that an additional 68,000 gpd capacity will be needed to serve the Greater Dripping Springs area (see CMA Engineering Report, CMA, 2015). Table 1.1 summarizes the design flows for each phase.

3.2 Current and Projected Plant Influent Loads

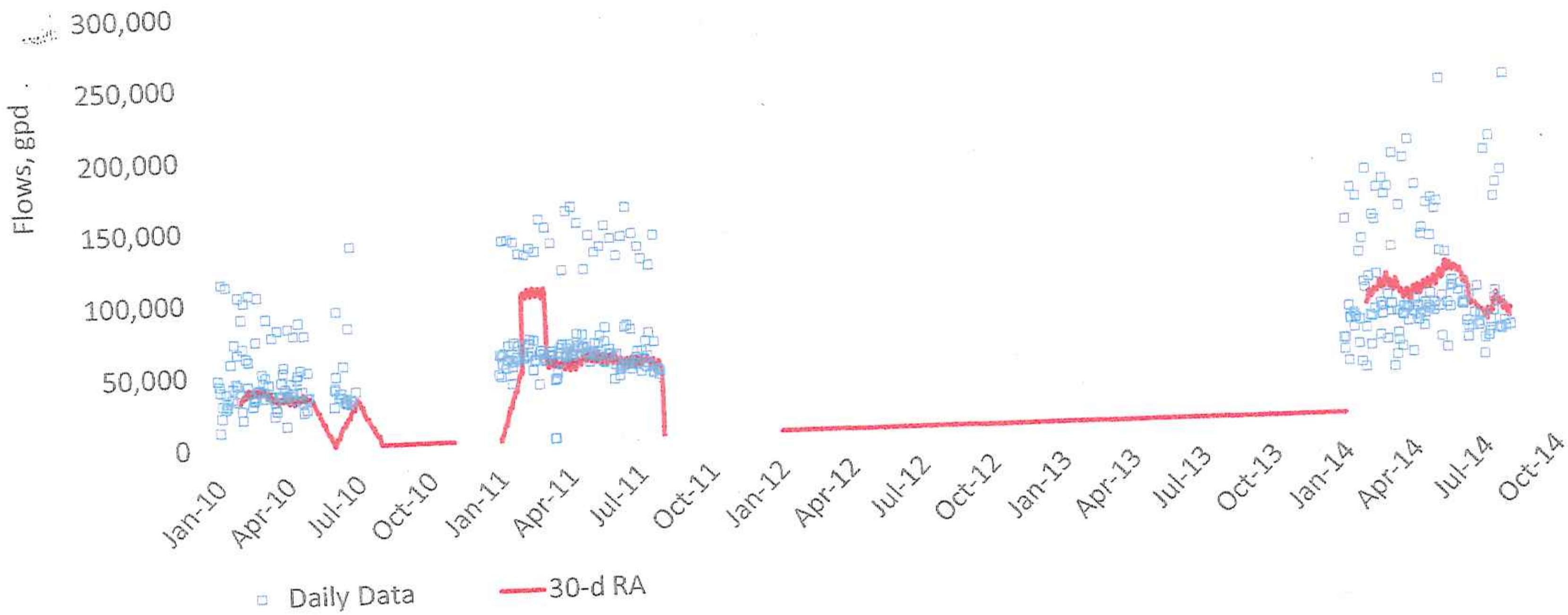
The influent design concentrations and loads for five-day biochemical oxygen demand (BOD5), total Kjeldahl nitrogen (TKN), ammonia, and total phosphorus (TP) were determined based on historical data. Since influent flow data was not consistently available, eight months of influent load data was used for this analysis (January through August 2014) (Figure 1.2). Influent concentrations were recorded once a week. Maximum month concentrations were observed in the Spring (March to May).

Influent BOD5 concentrations are shown for reference (Figure 1.2). Concentrations varied significantly in the influent between 50 and 600 mg/L with a slight increasing trend over previous years. Therefore, more recent plant influent data from 2014 was used to develop design influent loads.

Nitrogen and phosphorus influent loads show a similar pattern as BOD5 (Figure 1.3 and Figure 1.4) with maximum month influent loads occurring in spring of 2014. Influent concentrations have remained relative stable over the previous years (Figure 1.3 and Figure 1.4).

Table 1.2 summarizes the average influent loading and maximum month influent loading calculated from the 2014 data, the standard deviation of the average influent loading, and the resulting design influent concentrations calculated from this loading data (see footnotes in Table 1.2). The design influent concentrations under maximum month conditions were calculated based on influent historical load and resulted in slightly more conservative numbers than calculated using the alternative empirical method proposed by the Texas Regulations (§217.34(2), calculating the design organic loading based on the average daily organic load plus one standard deviation).

The SR WWTF does not monitor total suspended solids (TSS) in the plant influent. For the purpose of this preliminary design, the influent TSS concentrations were therefore estimated to be about 10 percent higher than the calculated influent BOD_5 concentrations.

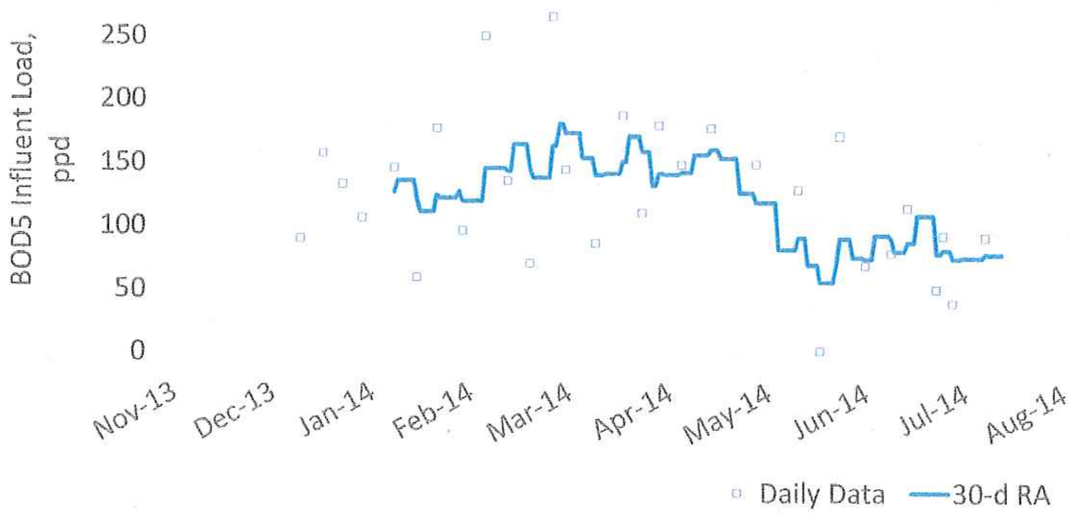


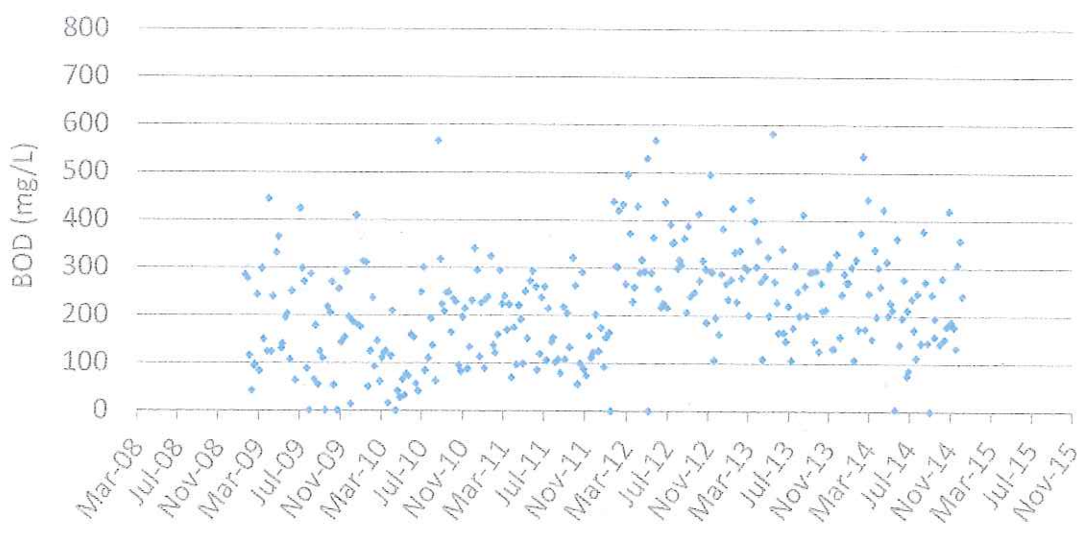
SOUTH REGIONAL WASTEWATER TREATMENT FACILITY HISTORICAL FLOWS

FIGURE 1.1

CMA ENGINEERING, INC.
CITY OF DRIPPING SPRINGS CONCEPTUAL BNR DESIGN

carollo



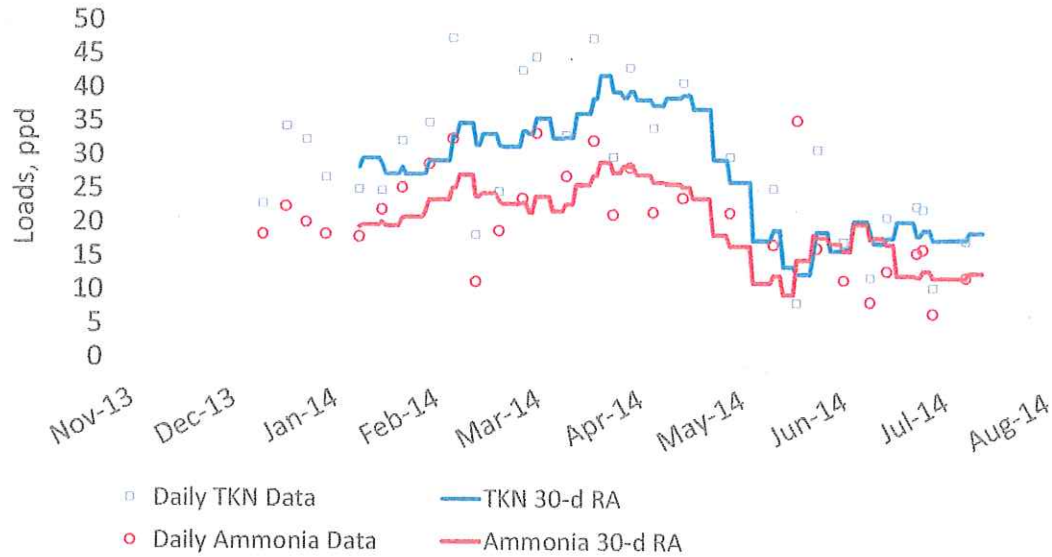


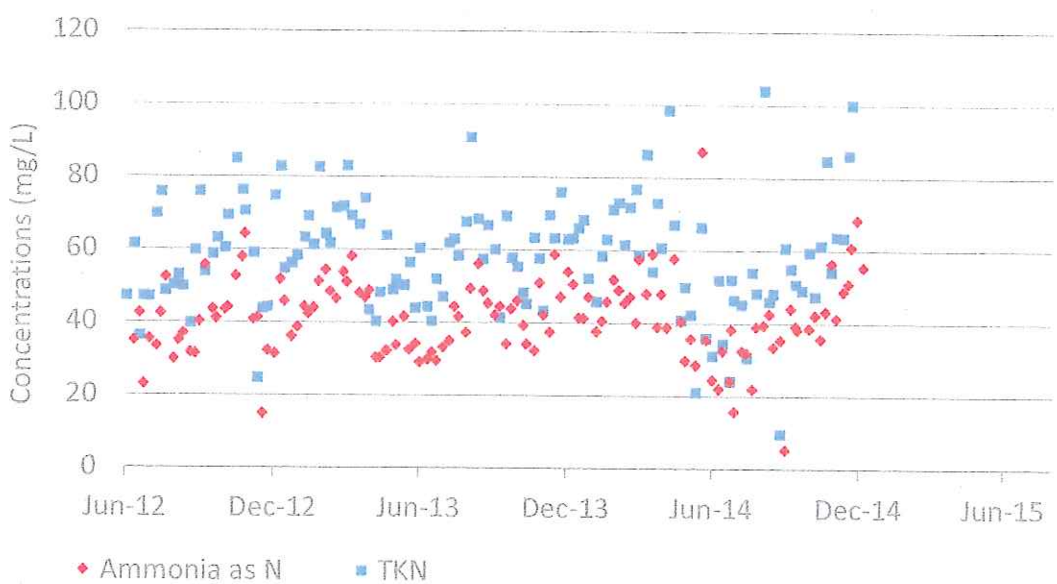
INFLUENT BOD_5 LOADS AND CONCENTRATIONS

FIGURE 1.2

CMA ENGINEERING, INC
CITY OF DRIPPING SPRINGS CONCEPTUAL BNR DESIGN

carollo



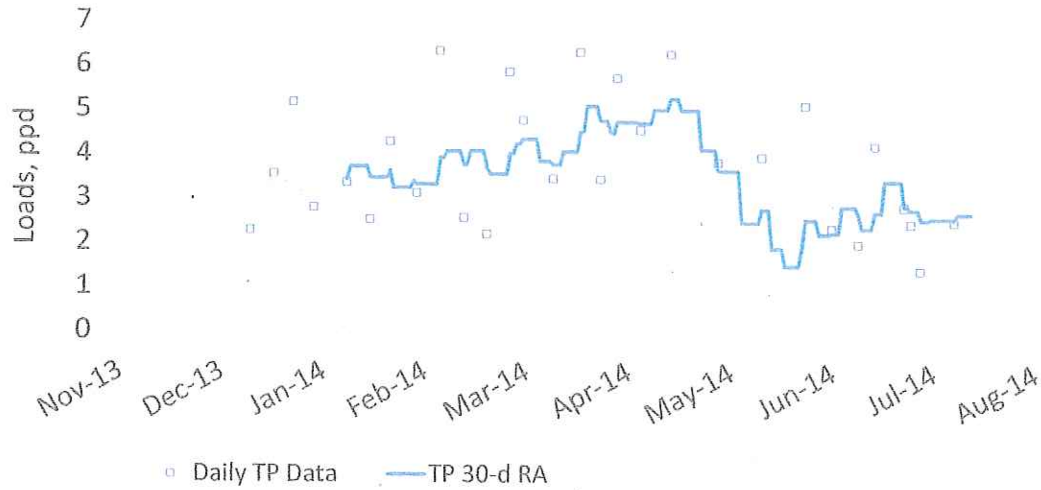


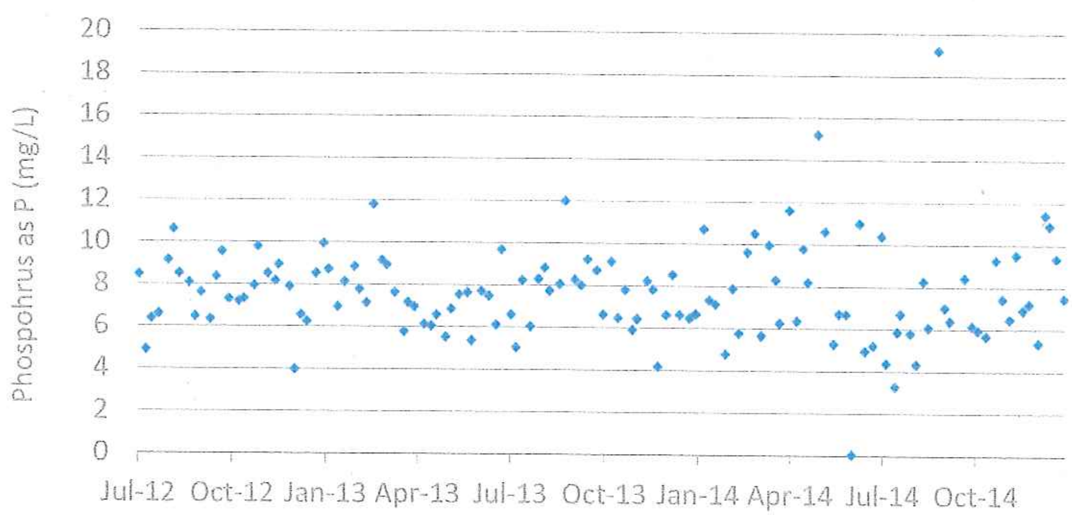
NITROGEN SPECIES INFLUENT LOADS AND CONCENTRATIONS

FIGURE 1.3

CMA ENGINEERING, INC.
CITY OF DRIPPING SPRINGS CONCEPTUAL BNR DESIGN

carollo





INFLUENT TOTAL PHOSPHORUS LOADS AND CONCENTRATIONS

FIGURE 1.4

CMA ENGINEERING, INC
CITY OF DRIPPING SPRINGS CONCEPTUAL BNR DESIGN

carollo

Table 1.2	Wastewater Influent Load and Concentration Design Criteria City of Dripping Springs Conceptual BNR Design CMA Engineering, Inc.			
	Existing Flows (Jan to Aug 2014)[1]	**Interim I Phase**	**Interim II Phase**	**Final Phase**
Influent Design Flows				
AADF, mgd	63,650	270,000	316,670	633,330
ADMMF, mgd (Permitted Flow)	92,590	399,000	497,500	995,000
Annual Average Daily Design Concentrations[2]				
Five-day biological oxygen demand (BOD_5), mg/L	227		227	
TSS, mg/L	NA[6]		250	
TKN, mg/L	53		53	
Ammonia nitrogen (NH_3-N), mg/L	38.6		38.6	
Total phosphorus (Total P), mg/L	6.9		6.9	
Annual Average Daily Design Loads[3]				
BOD_5, ppd	116 (±64.5)	510	600	1,200
TSS, ppd	NA	560	660	1,320
TKN, ppd	27.1 (±12.5)	120	140	280
NH_3-N, ppd	19.7 (±8.8)	87	100	200
Total P, ppd	3.5 (±1.8)	15.5	18.2	36.5
Maximum Month Design Concentrations[4]				
BOD_5, mg/L	241		241	
TSS, mg/L	NA		265	
TKN, mg/L	57		57	
NH_3-N, mg/L	39		39	
Total P, mg/L	7.2		7.2	

Table 1.2	Wastewater Influent Load and Concentration Design Criteria City of Dripping Springs Conceptual BNR Design CMA Engineering, Inc.			
	Existing Flows (Jan to Aug 2014)(1)	**Interim I Phase**	**Interim II Phase**	**Final Phase**
Maximum Month Design Loads(5)				
BOD_5, ppd	180	800	950	1,900
TSS, ppd	NA	880	1,050	2,100
TKN, ppd	42.2	190	230	460
NH_3-N, ppd	29.3	130	150	300
Total P, ppd	5.4	24	28.5	57

Notes:
(1) Based on effluent flow records from January through August 2014.
(2) Average annual daily design concentrations were calculated as follows:
Average of daily influent loads in 2014 / 8.34 / AADF, with AADF = 0.063,65 mgd.
(3) Average annual daily design loads calculated per §217.34(2) as the average loading received in 2014 with one standard deviation.
(4) Maximum month design concentrations calculated as follows:
Average daily design concentration * Load peaking factor / Flow peaking factor, where
Load peaking factor = ADMM load / ADA Load, and
Flow peaking factor = ADMMF / AADF
These concentrations were used to model the permitted ADMMF design capacity of the facility.
(5) Maximum month design loads reported as the maximum 30-day running average peak load observed in 2014 in the plant influent.
(6) TSS not reported in the plant influent. Design concentrations were estimated as 110% of the BOD_5 influent design concentrations.

4.0 CURRENT AND ANTICIPATED TREATMENT AND DISCHARGE REQUIREMENTS

The City of Dripping Springs currently operates under TCEQ Permit No. WQ0014488001, with an amendment pending to increase the permitted flow from 162,500 gpd to a total of 348,500 gpd while increasing the land use for treated effluent disposal via a combination of drip irrigation and surface irrigation. As of October 1, 2015, the current pending amendment does not authorize discharge of effluent into water in the state.

Table 1.3 summarizes the effluent limits assumed for the analysis presented herein.

Table 1.3	Current and Anticipated Future Effluent Permit Limits City of Dripping Springs Conceptual BNR Design CMA Engineering, Inc.	
Parameter	**Subsurface Drip Irrigation[1)]**	**Surface Water Discharge[2)]**
Average Daily Flow or Average Daily Maximum Flow (ADMMF), gpd	127,500	See permitted design flows listed in Table 1.1
BOD_5, mg/L	20 (Monthly Ave.) 30 (7-day Ave.) 45 (Daily Max.) 65 (Single Grab)	5 (Monthly Ave.) 10 (7-day Ave.) 20 (Daily Max.) 30 (Single Grab)
TSS, mg/L	20 (Monthly Ave.) 30 (7-day Ave.) 45 (Daily Max.) 65 (Single Grab)	5 (Monthly Ave.) 10 (7-day Ave.) 20 (Daily Max.) 30 (Single Grab)
Total P, mg/L	NA	0.5 (Monthly Ave.) 1 (7-day Ave.) 2 (Daily Max.) 3 (Single Grab)
Ammonia-N (NH_3-N), mg/L	NA	1.5 (Monthly Ave.) 5 (7-day Ave.) 10 (Daily Max.) 15 (Single Grab)
pH	6-9	6-9

Notes:

(1) Per TCEQ permit WQ0014488001 effective as of May, 2015.
(2) Anticipated effluent limits are based on direction received from CMA Engineering, Inc.
(3) In addition to the anticipated future effluent permit limits listed above, a design goal of < 6 mg/L total nitrogen (TN) was established for this evaluation.

5.0 EXISTING TREATMENT FACILITIES

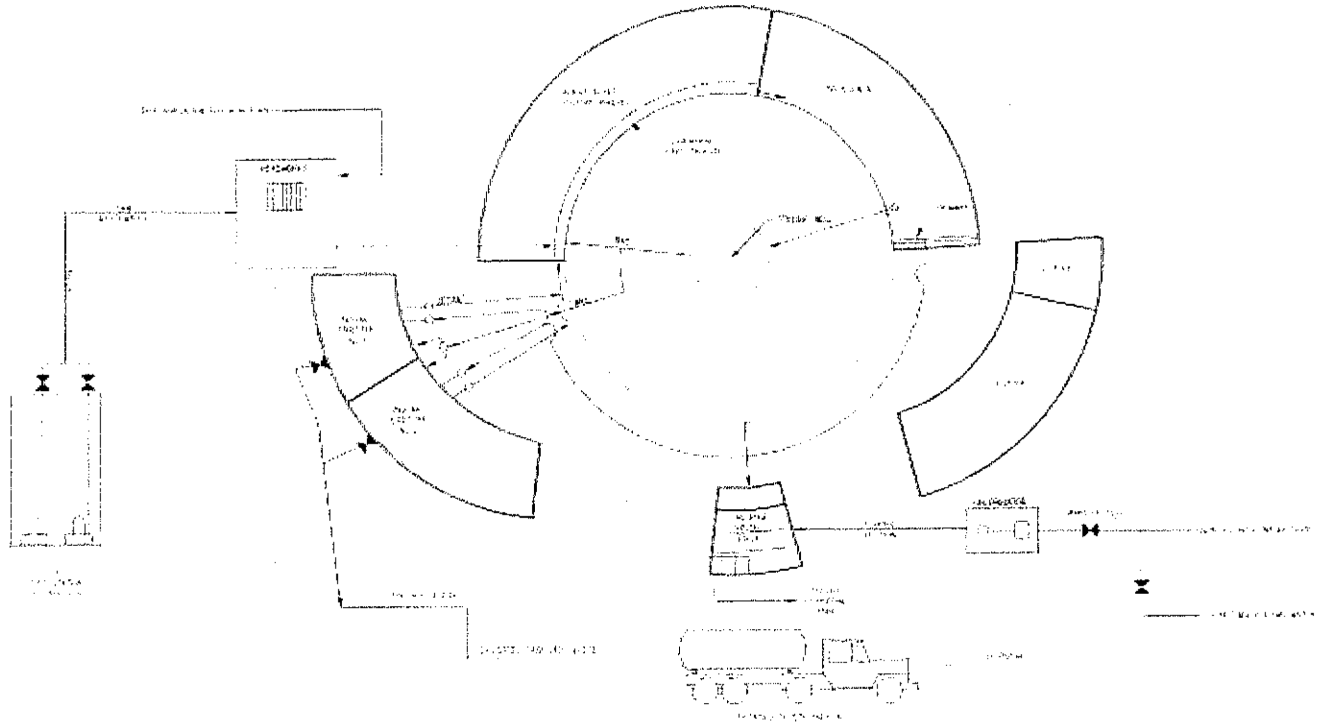
The SR WWTF is located in approximately 0.55 miles east of the intersection of Ranch Road 12 and Farm-to-Market Road 150 (See Figure 1.5) in the City of Dripping Springs, Texas. The vicinity map also shows the future planned Caliterra Development within the City boundaries and the currently permitted effluent subsurface and surface irrigation sites. The SR WWTF site is located outside of the 100-year flood plain.

The SR WWTF receives dominantly municipal and commercial wastewater from the Dripping Springs area and is managed and is currently operated by a Professional General Management Services, Inc. Figure 1.9 shows the current process flow diagram. Incoming wastewater is pumped from the influent lift station to an automatic mechanical fine screen from where it enters the aeration basin of a concentric Bullseye treatment plant. Aeration basin effluent enters then the secondary clarifier and is subsequently disinfected by chlorination. Disinfected effluent pumped into a storage tank prior to land application. The current wastewater treatment facilities at the SR WWTF consist of the following:

- Mechanical bar screens,
- A conventional activated sludge treatment process with coarse air bubble aeration,
- Secondary clarification,
- Gas chlorine disinfection,
- Aerobic digesters / Solids Holding Tanks,
- An effluent holding tank, and
- A drip irrigation system.

Disinfected effluent is stored and year-round land applied through dripping irrigation, although the pending permit amendment will allow for surface irrigation at the Caliterra subdivision.

Secondary solids are stored on-site and hauled to the nearby SWWC Utilities, Inc. (Windermere) Wastewater Treatment Facility for further treatment. Although currently not practiced, SR WWTF has the option per permit to treat the secondary sludge on-site by aerobic digestion with subsequent landfill disposal of solids. The unit process design criteria are summarized in Table 1.4.



SOUTH REGIONAL WASTEWATER TREATMENT FACILITY (WWTF)
EXISTING PROCESS FLOW DIAGRAM
(PROVIDED BY CMA, ENGINEERING, INC.)

FIGURE 1.6

CMA ENGINEERING, INC.
CITY OF DRIPPING SPRINGS CONCEPTUAL BNR DESIGN

Table 1.4	Existing Unit Process Design Criteria City of Dripping Springs Conceptual BNR Design CMA Engineering, Inc.	
Criteria	**Units(1)**	**Value**
Influent Lift Station		
Capacity	gpd	127,500
Activated Sludge Process		
Number of trains	-	1
Number of basins per train		3
Total Volume of all aeration basins	gal	243,698
Outer diameter	ft	94
Inner diameter	ft	62
Side water depth (SWD)	ft	15.5
Zone 1		
Arc	Degrees	63
Volume	gal	79,549
Length	ft	42.9
Zone 2 (Future, currently not in use)		
Arc	Degrees	114
Volume	gal	143,946
Length	ft	77.6
Zone 3 (Future, currently not in use)		
Arc	Degrees	16
Volume	gal	20,203
Length	ft	10.9
Spare Basin Volume (currently unused)		
Number of basins	-	1
Volume	gal	83,337
Length	ft	42.2
Outer diameter	ft	94
Inner diameter	ft	62
Arc	Degrees	62

Table 1.4	Existing Unit Process Design Criteria City of Dripping Springs Conceptual BNR Design CMA Engineering, Inc.	
Blower capacity		
Type of blowers	-	Kaeser Tri-Lobe
Number of blowers	-	2
Capacity, each	scfm	1000
Firm blower capacity	scfm	1000
Return Activated Sludge Pumps		
Type of pumps	-	Airlift
Number of pumps	-	1
Capacity, each	inch	10
Waste Activated Sludge Pumps		
Type of pumps	-	Air lift
Number of pumps	-	2
Capacity, each	inch	4
Secondary Clarifier		
Number of clarifiers	-	1
Volume	cf	45,286
Diameter	ft	62
Surface area	sf	3,019
Side water depth	ft	15.5
Weir length	ft	185.4
Chlorine contact chamber		
Arc	Degrees	21
Treatment capacity	gpd	22,240
Effluent Holding Tank		
Volume	gal	333,000
Storage capacity	days	2 days at 162,5000 gpd
Aerobic Digestion		
Number of basins	-	2
Total Volume	gal	112,909
Inside Diameter	ft	62

Table 1.4	Existing Unit Process Design Criteria City of Dripping Springs Conceptual BNR Design CMA Engineering, Inc.	
Outside Diameter	ft	94
Depth	ft	17
Digester 1		
Arc	degrees	31.5
Volume	gal	42,341
Digester 2		
Arc	degrees	52.5
Volume	gal	70,568

Notes:
(1) NA - not available.

6.0 EXISTING TREATMENT PERFORMANCE

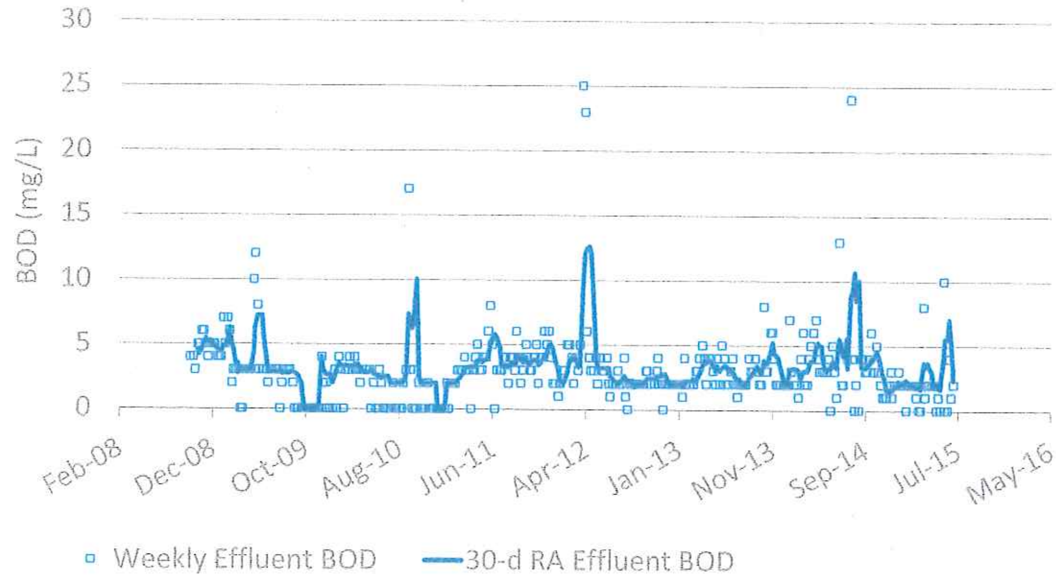
Effluent BOD5 typically remains below 10 mg/L (Figure 1.10). TSS in the secondary treated effluent typically remains below 10 mg/L with rare exceptions reaching 15 mg/L on a monthly average basis (Figure 1.11).

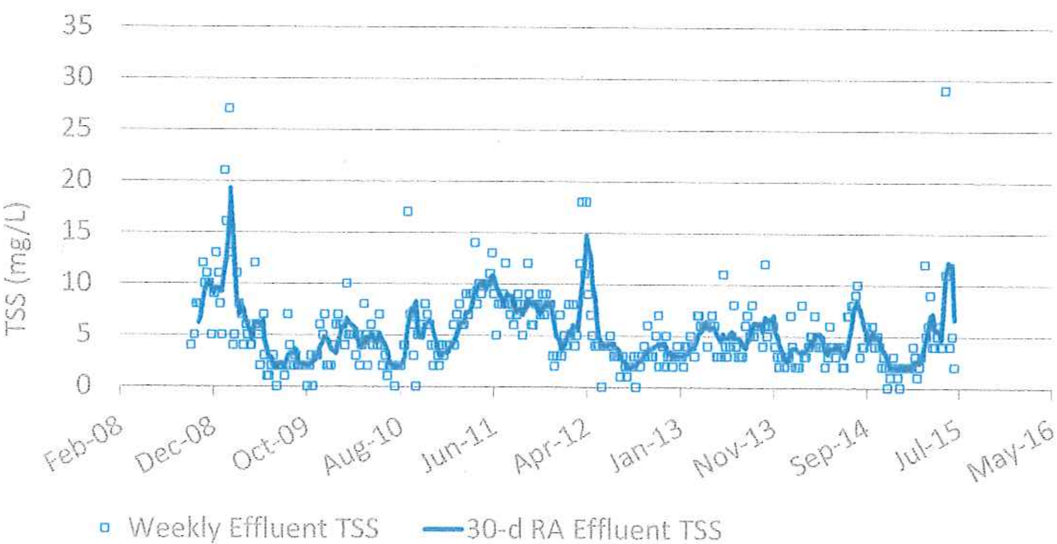
Effluent ammonia concentrations have largely remained below 1 mg/L between 2009 and 2012 (Figure 1.12). Nitrification was lost at the beginning of 2013 throughout the end of 2014 and operates since then in partial nitrification mode.

The SR WWTF does not remove nitrogen at this time, therefore effluent nitrate concentrations range between 30 and 50 mg/L when the process is fully nitrifying (Figure 1.13). When the facility is not nitrifying effluent nitrate concentrations are close to the detection limit.

Effluent total nitrogen concentrations have varied significantly between a few mg/L and 40 mg/L (Figure 1.14). Apparently, the facility was effectively removing nitrogen to very low concentrations in the summer of 2013. Effluent nitrogen concentrations remained also on average below 10 mg/L through the majority of 2015.

The operating mixed liquor suspended solids (MLSS) concentrations recorded since 2008 have traditionally been high (Figure 1.15). It is unclear why the facility lost nitrification at the same time when the MLSS concentrations were increased from approximately 6,000 mg/L above 10,000 mg/L even though the influent flows to the facility remained relatively stable (see Figure 1.1). Additional operational data that could explain these trends (e.g. dissolved oxygen concentrations in the aeration basin) was not available for review.





EFFLUENT BOD5 AND TSS CONCENTRATIONS

FIGURE 1.7

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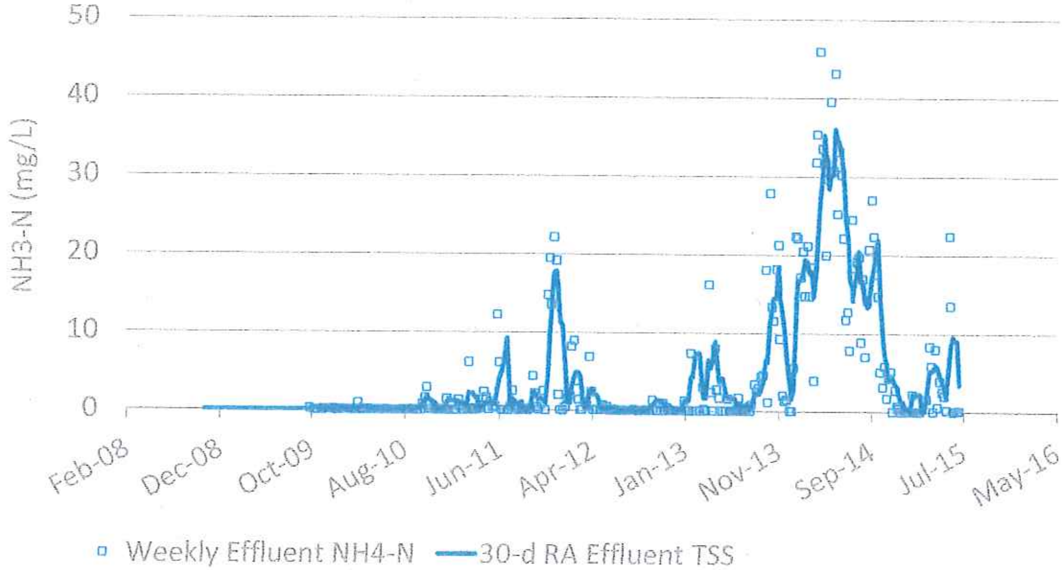

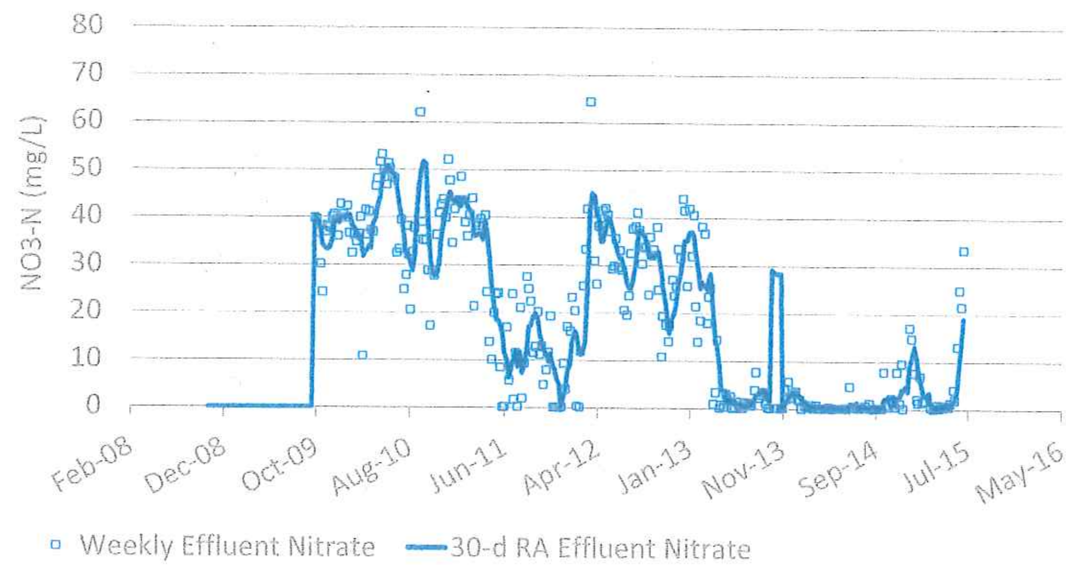

EFFLUENT AMMONIA AND NITRATE CONCENTRATIONS

FIGURE 1.8

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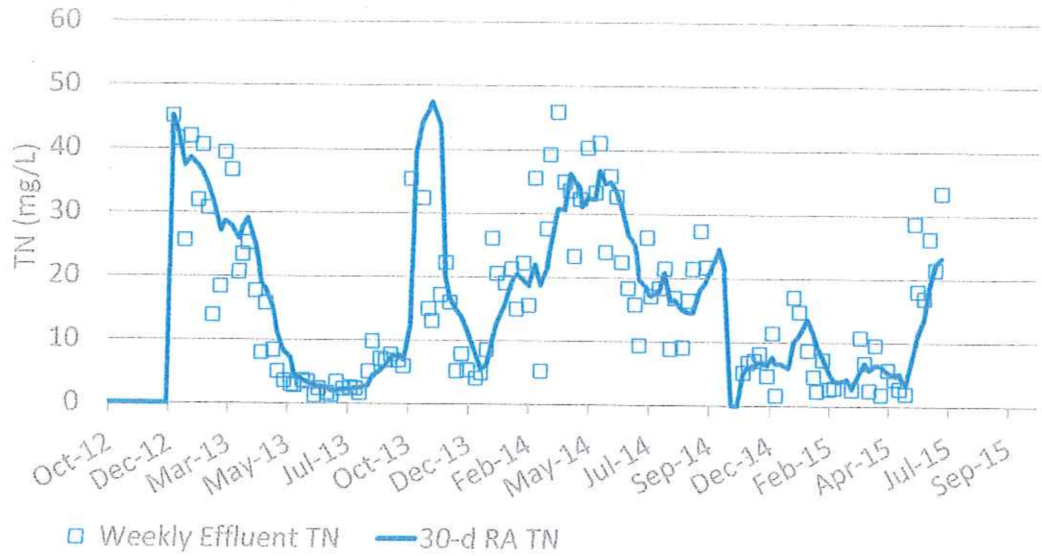

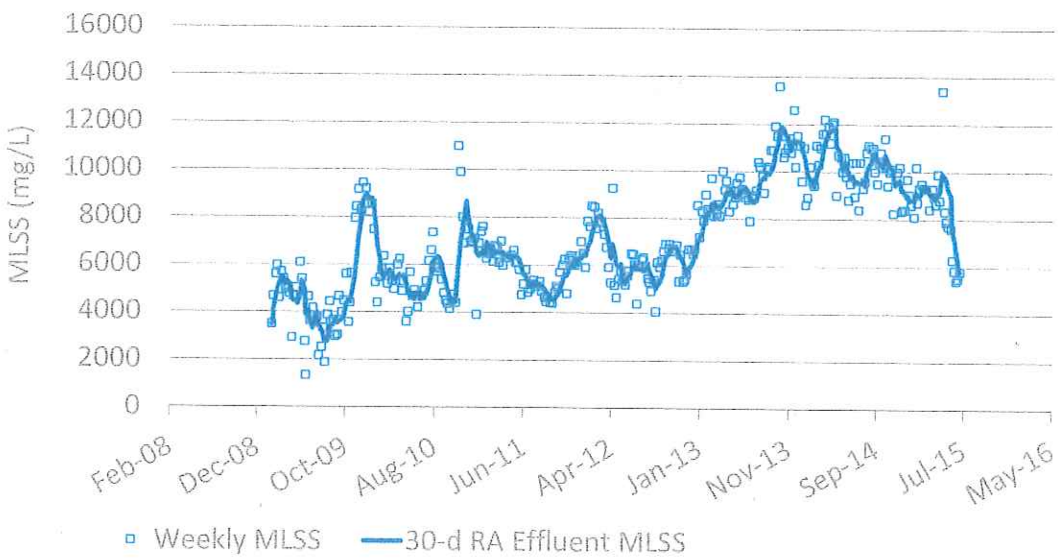

EFFLUENT TOTAL NITROGEN AND MIXED LIQUOR SUSPENDED SOLIDS CONCENTRATIONS

FIGURE 1.9

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7.0 BASIS OF CONCEPTUAL EVALUATION

This section presents critical design criteria used for the capacity analysis and process expansion design presented in Sections 9 and 10.

7.1 Design Wastewater Temperature

Historical data for the wastewater temperature at the SR WWTF was not available. Therefore, the design temperature per Texas Administrative Code (TAC) Title 30, Chapter §217.154.(b)(3) was adopted from a similar wastewater treatment facility located within 50 miles of the proposed site. The average lowest consecutive seven-day mean reactor temperature used in a recent design at the adjacent Hays County Water Control & Improvement District (WCID) No. 1 WWTP in the Belterra Subdivision near Dripping Springs, using concrete tanks) was 20 degrees Celsius. Since the SR WWTF has above-ground steel tanks the minimum operating temperature was selected to be 18 degrees Celsius (2 degrees Celsius lower) in accordance TAC Chapter 217.

7.2 Design Aerobic Solids Retention Time

The design aerobic solids retention time (aSRT) for the 4-Stage BNR secondary treatment process was selected to achieve full nitrification (less than 1 mg/L) at the design temperature of 18 degrees Celsius. Figure 1.16 shows the effluent ammonia concentration as a function of the aSRT as simulated by the process model Biowin for the facility. Based on this sensitivity analysis it is recommended to use a minimum design aSRT of 6.0 days.

The washout SRT for nitrifiers at 18 °C is calculated as follows:

$$SRTmin = \frac{1}{\mu max * DO\ switch - ba * DO\ switch} = \frac{1}{(0.67 - 0.151)/d} = 1.94\ days$$

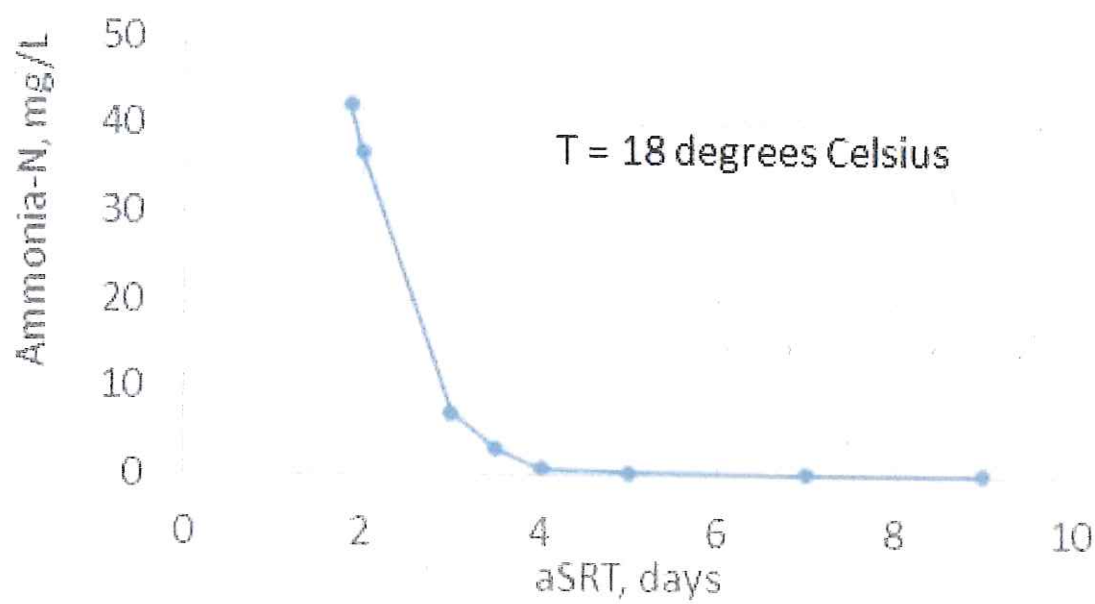
where,

μ_{max}: maximum growth rate for nitrifiers (1/d) at 18 °C

DO switch: adjustment factor for actual DO concentration in tankage (-)

b_a: decay constant for nitrifiers (1/d) at 18 °C

The aSRT safety factor at a design aSRT of 6.0 days and a washout SRT for nitrifiers of 1.94 days at the minimum design temperature of 18 °C is 3.0, which is considered to be adequately conservative for a conceptual design aiming to achieve ultra-low N removal.



EFFLUENT NH3-N CONCENTRATION AS A FUNCTION OF aSRT AT 18 °C

FIGURE 1.10

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7.3 Secondary Clarifier Capacity Criteria

The maximum secondary clarifier capacity was evaluated using the state point analysis (SPA). The Clarifier Safety Factor (CSF) in the SPA was selected to provide adequate protection for peak 2-hour influent flow events and was calculated based on the flow peaking factors introduced in Table 1.1 as

$$CSF = (\text{Peak 2-hr Flow} / AADF) / (ADMMF/AADF) \qquad \text{(Equation 1)}$$

$$4 / 1.5 = 2.7$$

As historical sludge settling index (SVI) data from the SR WWTF was not available for review, a conservative assumption was made using a design value of 150 g/mL.

The maximum MLSS concentration in aeration basins can per TAC Title 30, Chapter §217.164.(c)(3) range between 2000 mg/L upt o 5,000 mg/L. A maximum design MLSS concentration of 4,000 mg/L was selected as the upper limit for this conceptual design.

8.0 EXISTING CAPACITY EVALUATION

The secondary treatment capacity of the SR WWTF was estimated as a point of reference for the new BNR design development. This analysis indicated, that the existing treatment capacity under current effluent limits is higher than the current permitted treatment capacity of 127.500 gpd. Since the facility does not currently treat for nutrient removal and does not need to nitrify it is possible to operate at low SRTs and mixed liquor TSS concentrations. With all aeration basins in service for a total aerated volume of 243,698 gallons it is estimated that the treatment capacity is approximately 825,000 gal ADMMF. At this ADMM flow and loads the facility can operate at an aerated SRT of about 4 days while maintaining a clarifier loading that allows still adequately treating anticipated peak flows. At this capacity the aerated BOD loading would be approximately 50 ppd/1,000 cf of reactor volume, which is acceptable based on the 50 ppd BOD/1,000 cf limit set by 30 TAC 217.164(c)(2). (Since the TAC requires a minimum of two redundant treatment trains for all facilities with a capacity rating above 0.4 mgd, this is a theoretical secondary treatment capacity rating for reference only).

9.0 IMPLEMENTATION OF BNR TREATMENT TO ACHIEVE ULTRA-LOW NITROGEN AND PHOSPHORUS REMOVAL

9.1 Process Alternative Evaluation Summary

Two treatment alternatives were evaluated as part of the Direct Portable Reuse (DPR) Study (Carollo 2015) to convert the SR WWTF into an ultra-low BNR treatment facility:

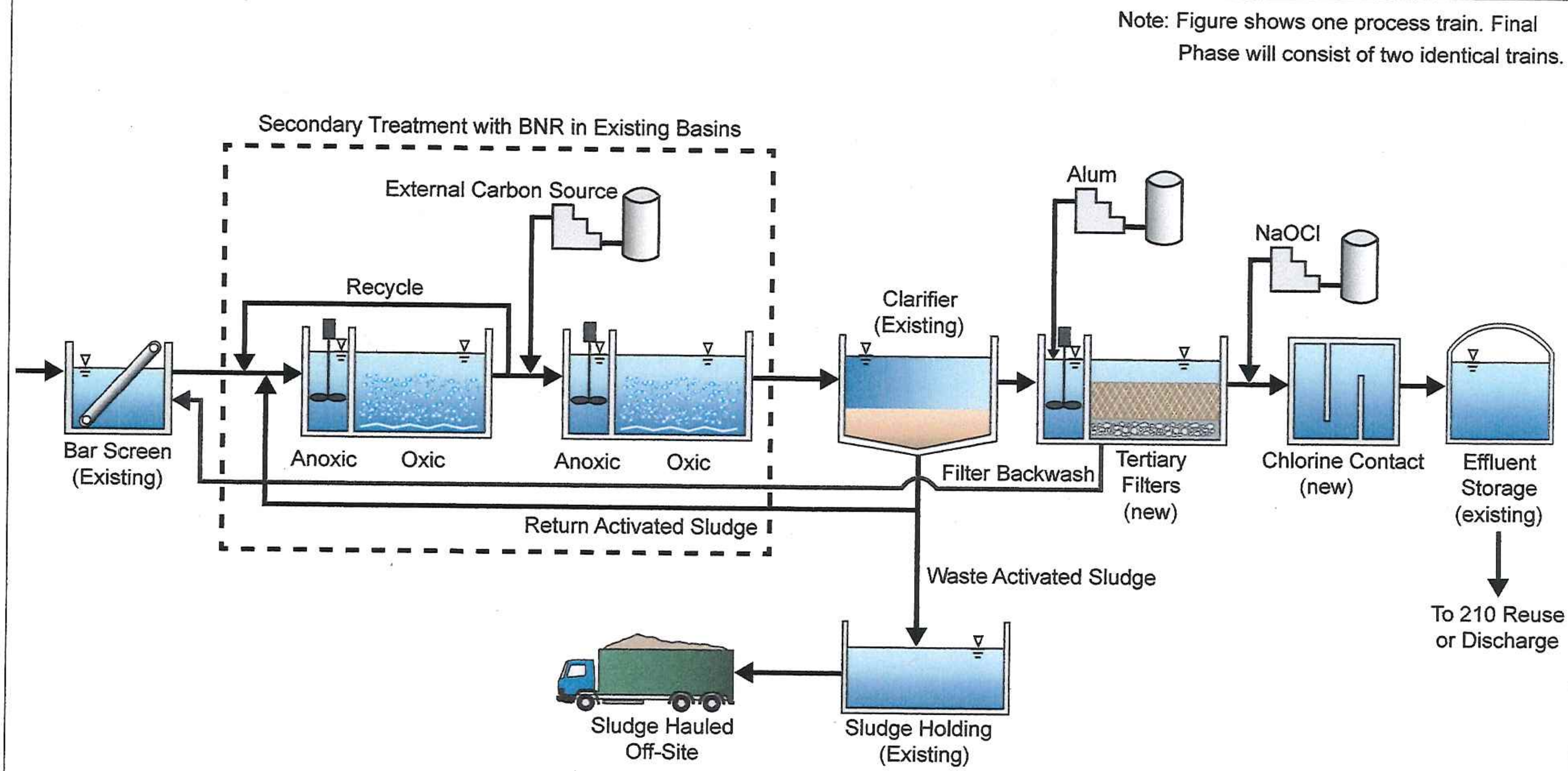
1. Membrane Bioreactor BNR treatment followed by non-RO advanced treatment for direct potable reuse
2. Four-stage Bardenpho activated sludge treatment for nitrogen removal with chemical P removal, conventional clarification and tertiary filtration followed by non-RO advanced treatment for direct potable reuse
3. Conventional active sludge treatment followed by RO advanced treatment for direct potable reuse.

The initial preliminary design and cost estimates comparison had indicated that a process conversion to MBR treatment was significantly more expensive compared to continued operation with the existing secondary clarifiers and filtration (Carollo, 2015). In addition, RO based treatment schemes for direct potable reuse would be significantly more expensive compared to BNR treatment followed by non-RO based advanced treatment for direct potable reuse (Carollo, 2015). Therefore, the decision was made to upgrade the facility to advanced BNR treatment, which can then be followed by non-RO based advanced treatment to meet potable water standards when the City is ready to pursue a DPR project (Carollo, 2015). In accordance with the DPR Study, a Four-stage Bardenpho process was selected the purposes of this evaluation; however, an evaluation of other BNR treatment processes should be conducted prior to the design phase.

9.2 Overview of Selected Process Modifications to Achieve Ultra-low Nitrogen and Phosphorus Limits

The conceptual BNR design presented in the following is therefore based on a Four-stage Bardenpho conversion of the existing conventional activated sludge process for enhanced nitrification and nitrogen removal followed by tertiary filtration to remove phosphorus through chemical enhanced precipitation and filtration. Tertiary effluent is then disinfected. Further treatment would be required to meet potable water quality standards (see Carollo, 2015). An overview of the process flow diagram with ultra-low BNR treatment followed by enhanced treatment for potable reuse is shown in Figure 1.11 and process modifications are briefly described in the following sections. Please note that Figure 1.11 shows one treatment train, but the Final Phase 995,000 GPD WWTF will include two identical trains with flow splitting at the headworks.

The conceptual design evaluation was performed for the existing WWTP structure using the process model BioWin to determine whether the structure is adequately sized to treat an ADMMF capacity of 497,500 gpd under the newly anticipated discharge requirements for surface water. In terms of phasing, a new treatment train would be constructed for Interim Phases I and II. Once this new train is operational under Interim Phase I and/or II, the current treatment train will be taken out of service and retrofitted to be identical to the new treatment train. These two trains together will constitute the Final Phase.



PROCESS FLOW DIAGRAM FOR SOUTH REGIONAL WASTEWATER TREATMENT PLANT WITH BNR UPGRADES

FIGURE 1.11

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CONCEPTUAL BNR DESIGN

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9.2.1 4-Stage Bardenpho Modifications

The target effluent TN limit of less than 5 mg/L (see Table 1.3) is suggested to be met with a four-stage Bardenpho process with external carbon addition. Figure 1.17 shows how this process is integrated into the existing treatment process. The aeration basins in the existing Bullseye treatment reactor will be modified to create an anoxic / aerobic / anoxic / aerobic tank zone configuration. Both anoxic zones will be equipped with mixers to keep the mixed liquor in suspension. Mixed liquor recycle (MLR) will be implemented to return nitrified effluent from the end of the first aerated reactor back to the head of the secondary treatment into the first anoxic zone to enhance denitrification. Low effluent nitrate levels will be achieved in the second anoxic tank through external carbon addition in form of methanol, Micro C, or alternative chemicals that are commercially available (such as acetic acid, ethanol, or sucrose). The final selection of carbon substrate added will be made during preliminary and final design. The coarse bubble diffuser systems in the existing tankage will need to be redesigned and replaced to install fine bubble diffusers into the two aerated zones.

9.2.2 Chemical P Removal and Tertiary Filtration Addition

There are various technologies available to achieve chemical phosphorus removal. Chemicals can be added at various locations into the treatment process and solids can be removed through various types of filters.

Due to the relatively low phosphorus limit proposed for this facility (0.5 mg/L on a monthly average), a conservative design is proposed. Tertiary phosphorus removal is suggested to be accomplished through chemical precipitation of phosphorus utilizing mixing, flocculation, sedimentation, and filtration. Alternatively, phosphorus could be removed by chemical precipitation in the aeration basins to eliminate the mixing and flocculation tank. This typically requires more chemicals and is not as efficient of a process to achieve low phosphorus limits. A final decision on the most cost-effective design selection can be during the preliminary and final design stages.

Chemical removal processes will be located downstream of all existing biological processes as denitrification can be inhibited if phosphorus concentrations are too low. Systems utilizing sedimentation also require downstream filtration systems to remove residual solids in the clarified effluent. All processes have in common that metal salts are introduced into the process and mixed with the effluent to precipitate phosphorus. Commonly ferric or alum salts are used for chemical P removal. Since the facility may implement UV disinfection downstream of the tertiary treatment in the future, it is recommended to use alum addition rather than ferric to avoid precipitation of iron on the sleeves of UV lamps. As an alternative, non-iron based chemicals can be used for chemical P removal, such as sodium aluminate.

The conceptual design is based on the assumption that conventional media filters will be used for solids separation. Cloth media filters are a relatively inexpensive alternative, have a smaller foot print, and are successfully used in Texas by several other facilities. Due to possible concerns regarding cloth media filtration downstream of chemical dosing for phosphorus removal, in particular for compliance with low phosphorus limits, this conceptual design was based on the conservative assumption that conventional tertiary media filters will be used.

Cloth filters should be evaluated against other options, such as conventional down-flow media filters, before making a final selection taking costs and maintenance requirements into account. For the purposes of this conceptual evaluation, the implementation of conventional down-flow media filters with intermittent backwash is assumed. These types of filters have a large footprint compared to other filtration systems and are thus the most conservative option from a planning perspective.

9.2.3 Disinfection

Final disinfection currently part of the Bullseye process complex will need to be abandoned and a new chlorine disinfection dose system and contact reactor will need to be constructed in the future downstream of the final tertiary P removal filters.

10.0 BNR CAPACITY EVALUATION AND FUTURE EXPANSION REQUIREMENTS

10.1 Existing BNR Capacity

The BNR capacity of the existing secondary treatment system (aeration basins and secondary clarifier) after modification into a 4-stage Bardenpho process was estimated to be 0.4975 mgd in the Interim II Phase (Appendix A). After addition of a second equally-sized Bullseye treatment process the capacity can be expanded to 0.995 mgd in the Final Phase. The following sections summarize the design assumptions underlying this capacity assessment and the conceptual design modifications required to convert the existing facility to ultra-low BNR treatment meeting effluent discharge goals for TN of 5 mg/L or less and Total P of 0.5 mg/L or less (see Table 1.3) throughout the year. Detailed mass balances for each Phase based on BioWin process modeling are shown in Appendix A.

10.1.1 Preliminary Treatment

The existing lift station will need to be expanded to accommodate the future peak design flows associated with all Permit Phases (see Table 1.1). The existing mechanically cleaned bar screen is limited to a capacity of approximately less than 399,000 gpd. The design of the expanded coarse screens must include a bypass channel sized to handle the peak flow of the facility with means of diverting flow in case of screen failure. The design of the expanded screen must also meet any additional requirements specified in TAC §217.121 and be adequately sized to handle peak 2-hours flows while safely protecting downstream processes and equipment from debris and grit. The new bar screens will also incorporate flow splitting. *Preliminary and final design should evaluate the costs and benefits of* converting the facility to fine screens.

10.1.2 Aeration Basins and External Carbon Feed Facility

The existing aeration basins will need to be modified to accommodate a 4-stage Bardenpho process. Table 1.5 summarizes the conceptual design criteria for all Permit Phases. Where applicable, design criteria are compared to criteria established by the State of Texas. The Interim II and Final Phases will be equipped with an equally sized second parallel train as per TAC a design flow of equal or greater than 0.4 mgd must have a minimum of two aeration basins and two clarifiers [(§217.153(c)(1)], unless a variance to this requirement can be granted for the Interim II Phase while the Final Phase improvements are being constructed.

The proposed design meets all state requirements for nitrifying activated sludge processes. The design organic loading rate for conventional activated sludge process with nitrification is set by 30 TAC 217.164(c)(2) for 50 ppd BOD_5/ 1000 cf The facility is designed for an MLSS concentration of at least 2,000 mg/L but less than 5,000 mg/L.

The secondary treatment capacity is capped by the MLSS concentration in the aeration basins, which was not allowed to significantly exceed 5,000 mg/L. It is not recommended to operate at higher solids concentrations in the aeration basins, as foaming and filament growth may increase. Preliminary and final design phases need to evaluate an adequate diffuser system design to assure sufficient oxygen transfer into the mixed liquor in the aerated zones.

A minimum freeboard at peak flow of 18 inches must be maintained under consideration of the design MLR flows. Detailed design should include provisions for foam control, such as surface wasting or the ability to chlorinate RAS. The minimum detention time for secondary treatment with nitrification exceeds 1.8 hr at the 2-hr peak flow (§217.154, Table F.2).

External carbon feed will require construction of a new carbon feed facility. Sizing, design, and ultimate location will depend on the type of chemical that will be added to the process. It is recommended to test various chemicals prior to full scale implementation to develop suitable dose-response and operations and maintenance (O&M) cost curves.

Table 1.5 Existing Unit Process Design Criteria
City of Dripping Springs Conceptual BNR Design
CMA Engineering, Inc.

Criteria	Units[1]	Texas Design Requirements	Interim I Phase	Interim II Phase	Final Phase
Design Capacity					
ADMMF	mgd		0.399	0.4975	0.995
Peak 2-hr Flow	mgd		1.6	1.99	3.98
BOD Loading at ADMMF	ppd		800	1,000	2,000
Activated Sludge Process					
Number of Treatment Trains	-	> 0.4 mgd two trains	1		2
Number of Basins per Train	-			1	
Total Volume of all Aeration Basins	gal		327,340		654,680
	1000 cf		43.9		87.8
Organic BOD Loading	ppd BOD /1,000 cf	<50	18.2	22.8	
Hydraulic Detention Time at 2-hr Peak Flow	hr	>1.8	4.9	3.9	
Total Aerated Volume	gal		177,080 (54%)		354,160 (54%)
Total Unaerated Volume	gal		150,250 (46%)		300,500 (46%)
Outer diameter	ft			94	
Inner diameter	ft			62	
Side Water Depth (SWD)	ft	> 10 ft diffuser submergence		15.5	
Number of zones per Basin	-			4	
Zone 1 - Anoxic					
Arc	Degrees			41	
Volume per Train	gal			52,320	
Total Volume	gal		52,320		104,640

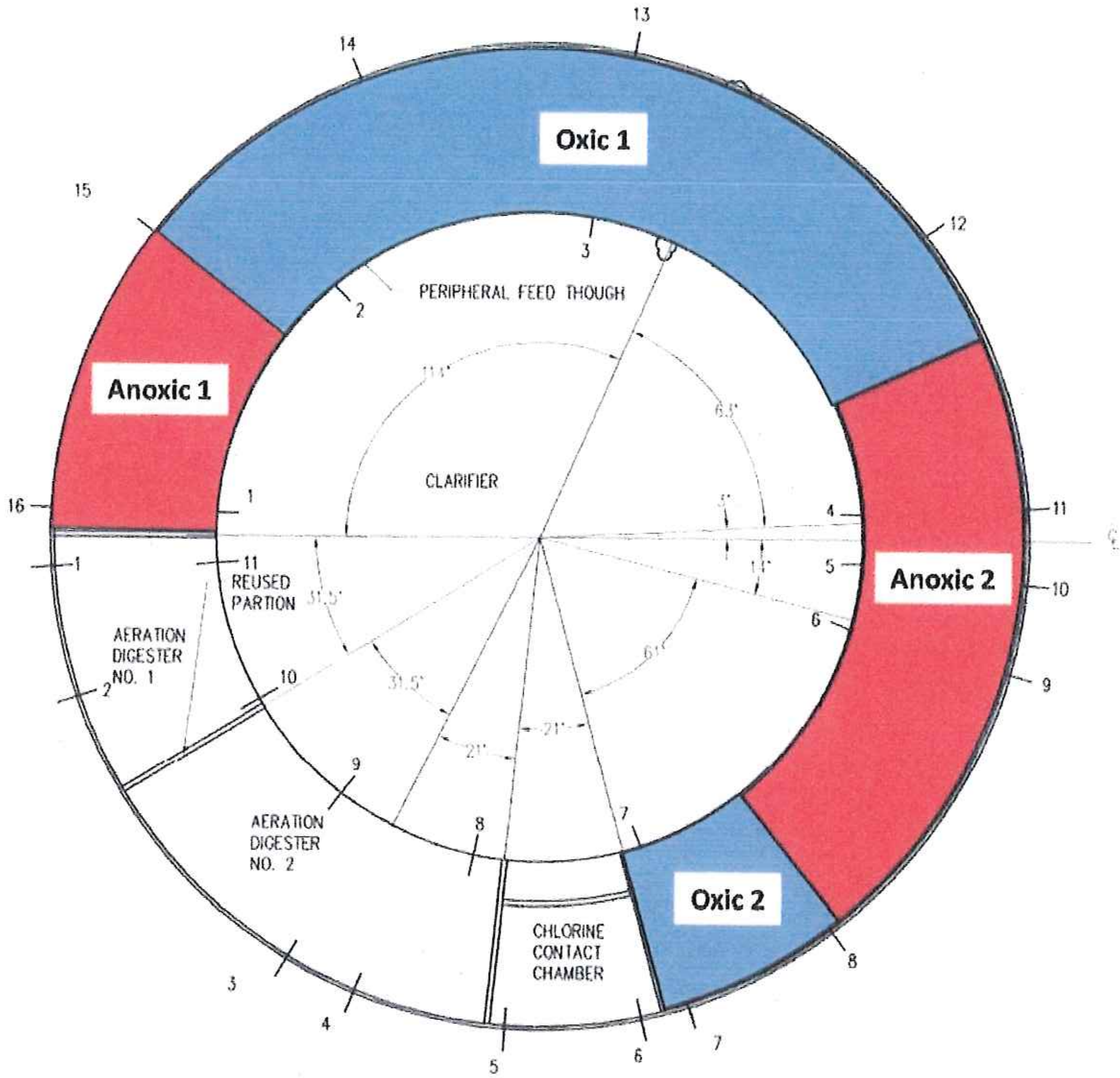
Table 1.5	Existing Unit Process Design Criteria City of Dripping Springs Conceptual BNR Design CMA Engineering, Inc.				
Criteria	**Units[(1)]**	**Texas Design Requirements**	**Interim I Phase**	**Interim II Phase**	**Final Phase**
Zone 1 - Anoxic (continued)					
Hydraulic Retention Time at ADMMF	hrs		3.1	2.5	
% of total Aeration Volume	%			16 %	
Type of Mixing	-			Mechanical	
Zone 2 - Aerobic					
Arc	Degrees			115	
Volume per Train	gal			147,570	
Total Volume	gal		147,570		295,140
Hydraulic Retention Time at ADMMF	hrs		8.9	7.1	
% of total Aeration Volume	%			45 %	
Zone 3 - Anoxic					
Arc	Degrees			77	
Volume per Train	gal			97,930	
Total Volume	gal		97,930		195,866
Hydraulic Retention Time at ADMMF	hrs		5.9	4.7	
% of total Aeration Volume	%			30 %	
Type of Mixing	-			Mechanical	
Zone 4 - Aerobic					
Arc	Degrees			23	
Volume per Train	gal			29,510	
Total Volume	gal		29,510		59,028
Hydraulic Retention Time at ADMMF	hrs		1.8	1.4	
% of total Aeration Volume	%			9 %	

Table 1.5 Existing Unit Process Design Criteria
City of Dripping Springs Conceptual BNR Design
CMA Engineering, Inc.

Criteria	Units[1]	Texas Design Requirements	Interim I Phase	Interim II Phase	Final Phase
Mixed Liquor Recycle					
Flow at ADMMF	mgd		0.8	1.0	2.0
% of ADMMF Influent	%			200%	
External Carbon Addition					
Methanol equivalents	gpd		9.6	12	2436
Operational Design Conditions					
Min. Wastewater Temperature	°C			18	
Minimum aerobic SRT, (aSRT)	days			6	
Mixed Liquor Suspended Solids (MLSS)	mg/L	2,000-5,000	3,010	3,770	

The effluent alkalinity could be low (insufficient influent alkalinity data available to reliably model), suggesting that the implementation of an alkalinity addition system might be required. Carollo recommends the routine monitoring of alkalinity to determine whether alkalinity addition will be required.

Figure 1.12 illustrates the new zone configuration in the Bullseye treatment reactor after the conversion to a 4-Stage Bardenpho treatment process. It may be beneficial to split aerated Zone 2 in half with an additional baffle wall to improve nitrification through enhanced plug flow.



Background image provided by CMA Engineering, Inc.

PROPOSED AERATION BASIN CONFIGURATION (PLAN VIEW)

FIGURE 1.12

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CITY OF DRIPPING SPRINGS CONCEPTUAL BNR DESIGN

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10.1.3 Aeration System

The existing diffuser system in the aeration basins will need to be replaced to provide fine bubble aeration in aerated Zones 2 and 4. Preliminary and final design should reevaluate whether the existing blowers are capable to provide sufficient firm blower capacity to maintain a dissolved oxygen (DO) concentration of 2 mg/L at maximum diurnal BOD loading rate, as required by the TCEQ, providing minimum oxygen supply and airflow requirements for diffused air for the design BOD loading and minimum mixing requirements.

10.1.4 Secondary Clarifiers

The design criteria for secondary clarification are summarized in Table 1.6 for all Permit Phases compare, as applicable, to established state design criteria. Overall the secondary clarifiers in all Permit Phases are underloaded, even at anticipated Peak 2-hr flows. All State design criteria are met with the proposed design.

The maximum surface loading rate for secondary treatment with nitrification (without RAS flow) does not exceed 1,200 gpd/sf at the 2-hr peak flow. For a facility with a design flow of less than 1.0 mgd, the weir loading must not exceed 20,000 gpd at the peak flow per linear foot of weir length (TAC §217.152(b). The detailed design must include addition of dedicated scum pumps to remove scum from the secondary clarifiers (TAC §217.152(c)(4)). A clarifier with mechanical sludge collector and a surface area greater than 200 sf must have a minimum SWD of 10 feet. The return active sludge (RAS) pump system must be capable of pumping at least 200 gpd / sf but not more than 400 gpd/sf. Sufficient RAS pumping units must be provided to maintain the maximum design return pumping rate with the largest single pumping unit out of service (§217.158 (c)(3)). The pumping capacity may be controlled via throttling, variable speed drives, or multiple pump operation. A minimum freeboard at peak flow of 12 inches must be maintained in the secondary clarifiers at peak flow.

The waste activated sludge (WAS) pumping system requires at least two pumping units and must be sized to prevent excessive solids accumulation in the clarifiers (§217.158 (d)). When the design flow exceeds 0.4 mgd a flow measurement of the WAS and RAS discharges must be provided for process control. It is strongly recommended to include flow monitoring already in Phase 1 for BNR operation.

Table 1.6 Conceptual BNR Design Criteria - Secondary Clarification
City of Dripping Springs Conceptual BNR Design
CMA Engineering, Inc.

Criteria	Units(1)	Texas Design Requirements	Interim I Phase	Interim II Phase	Final Phase
Design Capacity					
ADMMF	mgd		0.399	0.4975	0.995
Peak 2-hr Flow	mgd		1.6	1.99	3.98
Secondary Clarifiers					
Number of Units	-	> 0.4 mgd two trains	1		2
Volume	cf		45,286		90,572
	gal		338,740		677,480
Diameter	ft			62	
Surface area	sf		3,019		6,040
Side water depth	ft	>10		15.5	
Weir length	ft		185.4		370
Design Sludge Volume Index (SVI)	mL/g			150	
Clarifier Safety Factor (CSF)	-			2.7	
Weir Loading Rate @ Peak 2-hr Flow	gal/ft	<20,000	5,720	10,730	
Surface Overflow Rate @ Peak 2-hr Flow	gal/sf/day	<1,200	350	660	
Return Activated Sludge Pumps					
Type of Pumps	-			VFD Controlled	
Flow at 150 % of Permitted Influent	mgd		0.6	0.75	1.5
	gpm		420	490	980
Turndown (40% of ADMMF)	mgd		0.16	0.2	0.4
Waste Activated Sludge Pumps					
Type of pumps	-			VFD Controlled	
Number of pumps	-		2		4

10.1.5 Chemical Addition

Chemical addition for phosphorus removal will be added upstream of tertiary filtration with the option to add chemicals also upstream of the secondary clarifiers. Adequate provisions must be included during preliminary and final design to allow for metered dosing and effective mixing, and coagulation to occur upstream of the filters to avoid unnecessary chemical consumption. Design requirements in accordance with Subchapter K of the TAC must be followed. Table 1.7 summarizes the chemical feed design criteria.

Table 1.7 Conceptual BNR Design Criteria - Chemical Alum Feed
City of Dripping Springs Conceptual BNR Design
CMA Engineering, Inc.

Criteria	Units(1)	Texas Design Requirements	Interim I Phase	Interim II Phase	Final Phase
Design Capacity					
ADMMF	mgd		0.399	0.4975	0.995
Chemical Addition					
Type of Chemical	-			Alum	
Dose	gpd		5.5	7.0	14.0
Chemical Strength	mg Al/L			150,000	

10.1.6 Tertiary Filtration

Post-secondary treatment chemical alum addition, flocculation and tertiary filtration will be provided to remove particulate phosphorus (§217.190(a)). As previously explained in section 9.1.2, for planning purposes it was assumed that a conventional down-flow media filter will be used. Preliminary and final design should evaluate whether cloth filters are a suitable cost-effective alternative for effluent polishing. Design criteria for the tertiary filters are summarized in Table 1.8. A minimum of two filter units must be provided for a facility using filtration to provide tertiary treatment for a permit requirement.

The down-flow media filters were sized per TAC by calculating the required filter surface area based on the peak flow through the filters with the largest filter unit out of service using a conservative hydraulic loading rate of 3 gpm per square foot of media surface for a single media filter (Table 1.8). Filtered water will be used for backwash water and will be returned from the filters to the head of the facility for processing. Surface air and/or water will be used for filter scouring.

Table 1.8 Conceptual BNR Design Criteria - Media Filtration City of Dripping Springs Conceptual BNR Design CMA Engineering, Inc.					
Criteria	**Units[1]**	**Texas Design Requirements**	**Interim I Phase**	**Interim II Phase**	**Final Phase**
Design Capacity					
PDF	gpd		611,800	762,840	1,525,600
Tertiary Filters					
Type of Filter	-		Single or Dual Media, down-flow		
Hydraulic Loading Rate	gpm/sf	<3	3.0	1.8	2.7
Number of Units	-	>2	2	3	4
Filter Size, each	sf			140	
Filter Size, total	sf		280	420	560

10.1.7 Disinfection

It is planned to use chlorine for final disinfection. Final disinfection needs to occur downstream of the tertiary P removal filters and therefore, a new chlorine dosing system and chlorine contact tank must be built on-site upstream of the effluent storage tank. The capacity of the chlorination system will need to be upgraded to safely treat the projected design flows for all Permit Phases (Figure 1.9).

Per Chapter 30 TAC 217.281 (b) (1), the Chlorine Contact Basin must be sized to provide a minimum Cl_2 contact time of 20 minutes at the peak flow, meaning the peak 2-hour flow. The dosage requirements are based on the effluent type (Chapter 30 TAC 217.272 (b), Table K.1). For secondary effluent, the dose required is 8 mg/L, for tertiary or nitrified, it is 6 mg/L. Per discharge permit, a 1 mg/L chlorine residual must be maintained after a CT of 20 min.

Table 1.9 Conceptual BNR Design Criteria - Final Disinfection City of Dripping Springs Conceptual BNR Design CMA Engineering, Inc.					
Criteria	**Units[1]**	**Texas Design Requirements**	**Interim I Phase**	**Interim II Phase**	**Final Phase**
Design Capacity					
Peak 2-hr Flow	mgd		1.6	1.99	3.98
Disinfection					
Oxidant	-			Gaseous chlorine	
Dosage	mg/L	>6 mg/L		> 6 mg/L	
Residual	mg/L	>1 mg/L		> 1 mg/L	
Chlorine Contact Basin					
Size	gal		30,000		60,000
HRT @ 2-hr PDF	min	>20	27	22	22

10.1.8 Process Monitoring and Control

BNR treatment for ultra-low nutrient limits requires a robust process monitoring and control support for reliable treatment and cost-effective process operation and chemical applications. During preliminary and detailed design the benefits of online instrumentation need to be further evaluated to reliably control e.g., DO concentrations in the aerated zones, effluent ammonia and nitrate, sludge blanket levels in the SCs, tertiary effluent phosphorous and turbidity. Effective and reliable process operation is also facilitated through automated electronic recording of such relevant data series. Per TAC, at minimum WAS and RAS flows need to be metered and controllable for enhanced BNR operation. The monitoring frequency of influent, effluent, and individual process operations will need to be increased to assure adequate BNR performance and chemical dosing. Specifically, aeration control and solids inventory management will need to be tightly controlled from day-to-day operation so ammonia and nitrate removal is adequately balanced.

10.1.9 Aerobic Digestion, Storage, and Sludge Hauling

Table 1.9 summarizes the WAS flow projections under ADMMF conditions in the Interim I and Interim II Phases at an aSRT of 6 days. The temperature in the sludge holding tanks is close to 18 °C in winter months.

Per 30 TAC 217, the volatile solids (VS) loading rate for aerobic digestion must be designed to be at least 100 lb but not more than 200 lb of VS per 1,000 cf per day. The DO concentration maintained in the liquid must be at least 0.5 mg/L. Energy input for mixing must be at least 20 scfm per 1,000 cf of aeration tank if diffused air mixing is used. The minimum HRT for staged aerobic digestion at 20 degrees is 28 days and for non-staged aerobic digestion 40 days. As the volume in the tanks does not meet the aerobic digester requirements, the tanks are serving as sludge holding tanks (see Table 1.10).

Table 1.10 Conceptual BNR Design Criteria - Sludge Holding Tanks
City of Dripping Springs Conceptual BNR Design
CMA Engineering, Inc.

Criteria	Units	Texas Design Require-ments	Interim I Phase	Interim II Phase	Final Phase
Waste Activated Sludge					
Flow at ADMMF in winter (100%)	gpd		10,000	11,000	22,000
Proportionally Scaled:					
75%	*gpd*		*7,500*	*8,250*	*16,500*
50%	*gpd*		*5,000*	*5,500*	*11,000*
25%	*gpd*		*2,500*	*2,750*	*5,500*
TSS concentration	%			1.0	
VSS Load	ppd		526	655	1,310
Sludge Holding Tanks					
Number of Basins (existing)	-		3		6
Total Volume[1)]	gal		135,150		270,300
	1,000 cf		18.1		36.1
HRT at ADMMF	days	2)	13.5	12.3	12.3
VSS Loading Rate	ppd/	100 - 200 lb per 1,000 cf per day	29.1	36.2	

Notes:
1. The total shown here includes the volume currently being used for chlorine contact in the existing treatment train and assumes that new chlorine contact basins will be constructed.
2. The minimum HRT for staged aerobic digestion at 20 degrees is 28 days and for non-staged aerobic digestion 40 days. As the volume does not meet the aerobic digester requirements, the tanks are serving as sludge holding tanks.

As an alternative to meeting minimum criteria for aerobic digestion, the existing permit allows for alternative options for disposal of solids that are not dewatered, and it is assumed that these options will remain available in the future. Under the current hauling procedure and an assumed hauling capacity of 10,000 gallons per truck, the sludge hauling frequency under the proposed phasing ranges from once per 4 days (at 25% flow under Interim Phase I) to 2-3 trucks per day (100% flow under the Final Phase).

Preliminary and final design should therefore evaluate alternatives to meeting aerobic digester requirements, if desired. This could involve expansion of digestion capacity or the installation of a membrane thickening system inside of one of the aerobic digester basins. Membrane thickening allows to increase the solids concentration up to 2.5% total solids.

10.1.10 Effluent Storage and Pump Station

The current effluent storage is designed to provide for 48 hours of storage to meet the current 167,500 gpd land application permit for drip irrigation. Preliminary and final process design will need to evaluate if additional effluent storage capacity is required or recommended for future 30 TAC 210 Reuse Authorization. It is proposed that a treated effluent pump station will be constructed as part of the current City pending permit amendment.

10.1.11 Emergency Power Supply

The facility currently operates an emergency power generator to provide reliability for the commercial power service. The existing back-up power generator system will need to be expanded to handle the increased electrical loadings of the expanded facility for pumping, aeration, and disinfection while satisfying any additional requirements specified under TAC §217.36 and §217.37.

10.2 Proposed Expansion Phasing

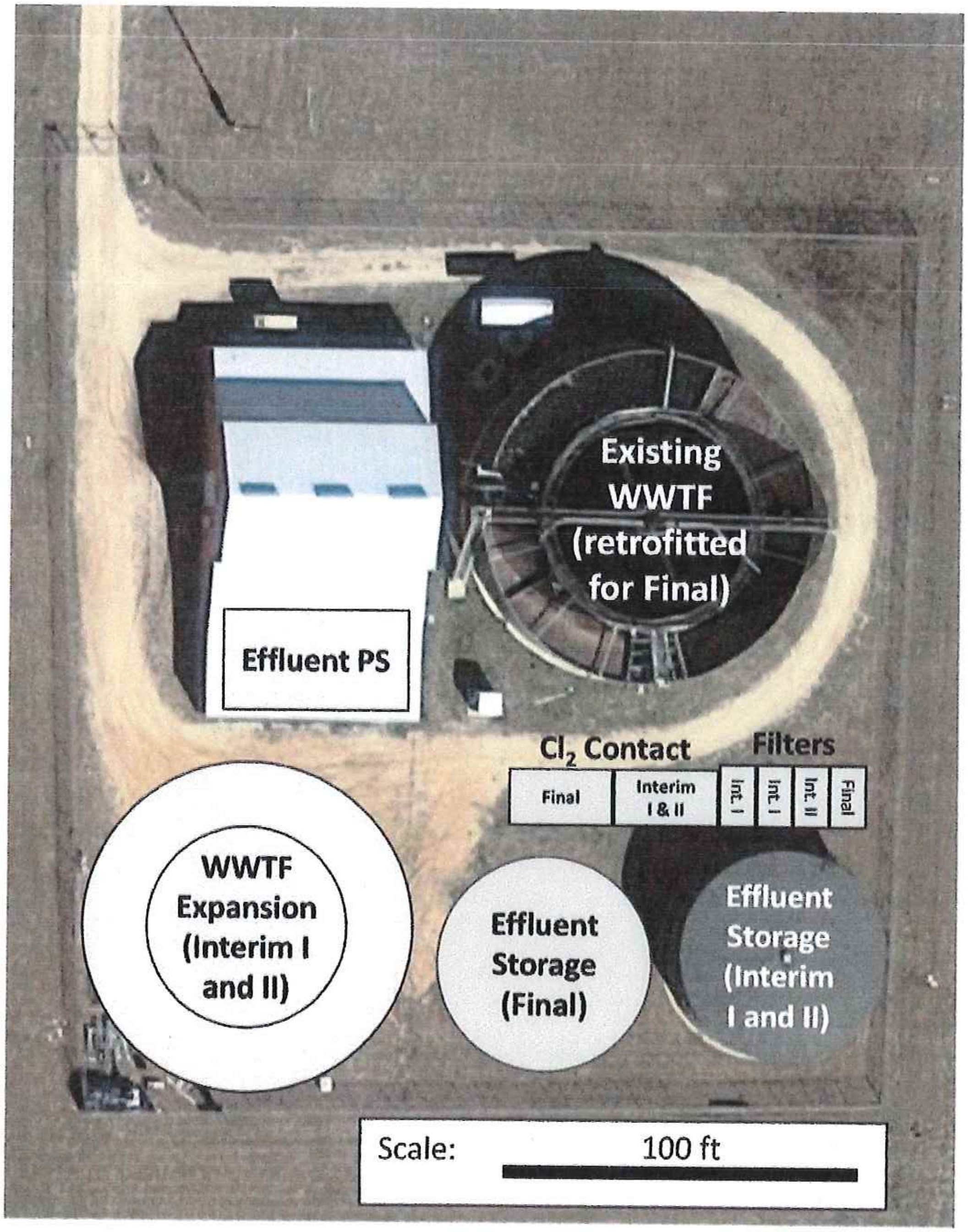
Figure 1.13 shows the proposed facility expansion phasing to increase the BNR capacity for all Permit Phases. It is assumed that once pumped from the influent pumping station, water will flow by gravity through the secondary and tertiary treatment units.

11.0 SUMMARY

The existing Bullseye treatment complex can be modified to accommodate a Four-stage Bardenpho treatment process with external carbon addition to achieve ultra-low nitrogen removal. This requires a rezoning of the existing aeration basins into anoxic and aerobic zones, implementation of MLR, and upgrades to the aeration diffuser and control system. External carbon addition will be necessary to remove sufficient nitrogen below 5 mg/L. Secondary treatment will be followed by tertiary chemical removal of P. As a conservative assumption this conceptual design assumed the addition of conventional downstream filters, recommending that alternative technologies be further evaluated during preliminary and final design. A new chlorine contact tank is proposed downstream of the tertiary filters to continue to maintain the required chlorine contact time prior to effluent discharge and/or reuse. The design will also include new chemical feed facilities for alum or ferric for chemical P removal and external carbon addition for enhanced nitrogen removal.

Ancillary treatment systems will need to be expanded in order to accommodate the capacity increase as part of all Permit Phases, including influent pumping, headworks screens, blower capacity, backup power supply, electrical, instrumentation, and control systems, as well as effluent storage, chemical storage and feed systems.

The Interim I Phase of the BNR upgrades is designed for an ADMMF of 0.399 mgd. The Interim II and Final Phases will require the addition of a second treatment train unless a variance can be granted to the dual treatment unit for WWTPs over 400,000 gpd. No other variances were identified to be needed based on the proposed design and the published design criteria of 30 TAC Chapter 217. The Interim II and Final Phases were designed for a treatment capacity of 0.4975 mgd and 0.995 mgd, respectively. Phasing will be accomplished by construction of a second treatment train as described herein for Interim Phase I, which will be operated under Interim Phase II if and when the variance for a single-train WWTP over 400,000 gpd is granted. The existing treatment train will be retrofitted to match the new treatment train and both trains operated in parallel will constitute the Final Phase.



PROPOSED WASTEWATER TREATMENT FACILITY
SITE PLAN WITH EXPANSION PHASING

FIGURE 1.13

CMA ENGINEERING, INC.
CITY OF DRIPPING SPRINGS CONCEPTUAL BNR DESIGN

carollo

12.0 REFERENCES

Carollo Engineers, Inc. (Carollo), 2015. City of Dripping Springs Direct Potable Reuse Feasibility Study, dated April 2015.

United States (US) Census Bureau, 2014a. South, West Have Fastest Growing Cities, Census Bureau Reports; Three of Top 10 are in Texas Capital Area, as accessed on February 16, 2015 at http://www.census.gov/newsroom/press-releases/2014/cb14-89.html

US Census Bureau, 2014b. Resident Population Estimates for the 100 Fastest Growing U.S. Counties with 10,000 or More Population in 2010: April 1, 2010 to July 1, 2013, as accessed on February 16, 2015 at http://factfinder.census.gov/rest/dnldController/deliver?_ts=442245578830

APPENDIX A – PROCESS MODELING RESULTS

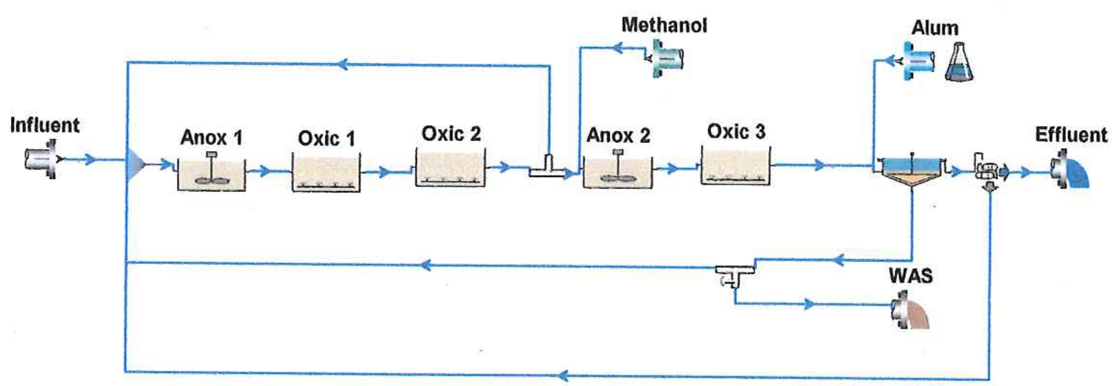
BioWin user and configuration data

Project details
Project name: Dripping SpringsProject ref.: 9756A.00
Plant name: Dripping Springs WWTPUser name: TRW

Created: 3/10/2015Saved: 10/13/2015

Steady state solution
Target SRT: 6.00 daysSRT #0: 5.94 days
Temperature: 18.0°C

Flowsheet



Configuration information for all Bioreactor units

Physical data

Element name	Volume [Mil. Gal]	Area [ft2]	Depth [ft]
Anox 1	0.0523	451.2366	15.500
Anox 2	0.0979	844.6283	15.500
Oxic 1	0.0738	636.3626	15.500
Oxic 3	0.0295	254.5450	15.500
Oxic 2	0.0738	668.0859	14.764

Operating data Average (flow/time weighted as required)

Element name	Average DO Setpoint [mg/L]
Anox 1	0
Anox 2	0
Oxic 1	2.0
Oxic 3	2.0

Oxic 2	2.0

Configuration information for all Ideal clarifier units

Physical data

Element name	Volume [Mil. Gal]	Area [ft2]	Depth [ft]
Ideal clarifier5	0.3500	3019.0000	15.500

Operating data Average (flow/time weighted as required)

Element name	Split method	Average Split specification
Ideal clarifier5	Flow paced	60.00 %

Element name	Average Temperature	Reactive	Percent removal	Blanket fraction
Ideal clarifier5	Uses global setting	No	99.89	0.05

Configuration information for all COD Influent units

Operating data Average (flow/time weighted as required)

Element name	Influent
Time	0
Flow	0.399
Total COD mgCOD/L	530.20
Total Kjeldahl Nitrogen mgN/L	56.90
Total P mgP/L	7.17
Nitrate N mgN/L	0
pH	7.30
Alkalinity mmol/L	6.99
ISS Influent mgISS/L	45.00
Calcium mg/L	80.00
Magnesium mg/L	15.00
Dissolved oxygen mg/L	0

Element name	Influent
Fbs - Readily biodegradable (including Acetate) [gCOD/g of total COD]	0.1600
Fac - Acetate [gCOD/g of readily biodegradable COD]	0.1500
Fxsp - Non-colloidal slowly biodegradable [gCOD/g of slowly degradable COD]	0.7500
Fus - Unbiodegradable soluble [gCOD/g of total COD]	0.0500
Fup - Unbiodegradable particulate [gCOD/g of total COD]	0.1300
Fna - Ammonia [gNH3-N/gTKN]	0.6600
Fnox - Particulate organic nitrogen [gN/g Organic N]	0.5000
Fnus - Soluble unbiodegradable TKN [gN/gTKN]	0.0200
FupN - N:COD ratio for unbiodegradable part. COD [gN/gCOD]	0.0350
Fpo4 - Phosphate [gPO4-P/gTP]	0.5000
FupP - P:COD ratio for unbiodegradable part. COD [gP/gCOD]	0.0110
FZbh - OHO COD fraction [gCOD/g of total COD]	0.0200
FZbm - Methylotroph COD fraction [gCOD/g of total COD]	1.000E-4
FZaob - AOB COD fraction [gCOD/g of total COD]	1.000E-4
FZnob - NOB COD fraction [gCOD/g of total COD]	1.000E-4
FZaao - AAO COD fraction [gCOD/g of total COD]	1.000E-4
FZbp - PAO COD fraction [gCOD/g of total COD]	1.000E-4

FZbpa - Propionic acetogens COD fraction [gCOD/g of total COD]	1.000E-4
FZbam - Acetoclastic methanogens COD fraction [gCOD/g of total COD]	1.000E-4
FZbhm - H2-utilizing methanogens COD fraction [gCOD/g of total COD]	1.000E-4
FZe - Endogenous products COD fraction [gCOD/g of total COD]	0

Configuration information for all Metal addition units

Operating data Average (flow/time weighted as required)

Element name	Alum
Ordinary heterotrophic organisms (OHO) mgCOD/L	0
Methylotrophs mgCOD/L	0
Ammonia oxidizing biomass (AOB) mgCOD/L	0
Nitrite oxidizing biomass (NOB) mgCOD/L	0
Anaerobic ammonia oxidizers (AAO) mgCOD/L	0
Polyphosphate accumulating organisms (PAO) mgCOD/L	0
Propionic acetogens mgCOD/L	0
Methanogens - acetoclastic mgCOD/L	0
Methanogens - hydrogenotrophic mgCOD/L	0
Endogenous products mgCOD/L	0
Slowly bio. COD (part.) mgCOD/L	0
Slowly bio. COD (colloid.) mgCOD/L	0
Part. inert. COD mgCOD/L	0
Part. bio. org. N mgN/L	0
Part. bio. org. P mgP/L	0
Part. inert N mgN/L	0
Part. inert P mgP/L	0
Stored PHA mgCOD/L	0
Releasable stored polyP mgP/L	0
Fixed stored polyP mgP/L	0
Readily bio. COD (complex) mgCOD/L	0
Acetate mgCOD/L	0
Propionate mgCOD/L	0
Methanol mgCOD/L	0
Dissolved H2 mgCOD/L	0
Dissolved methane mg/L	0
Ammonia N mgN/L	0
Sol. bio. org. N mgN/L	0
Nitrous Oxide N mgN/L	0
Nitrite N mgN/L	0
Nitrate N mgN/L	0
Dissolved nitrogen gas mgN/L	0
PO4-P (Sol. & Me Complexed) mgP/L	0
Sol. inert COD mgCOD/L	0
Sol. inert TKN mgN/L	0
ISS Influent mgISS/L	0
Struvite mgISS/L	0
Hydroxy-dicalcium-phosphate mgISS/L	0
Hydroxy-apatite mgISS/L	0
Magnesium mg/L	0
Calcium mg/L	0
Metal mg/L	150000.00
Other Cations (strong bases) meq/L	5.00
Other Anions (strong acids) meq/L	16697.46
Total CO2 mmol/L	7.00
User defined 1 mg/L	0
User defined 2 mg/L	0
User defined 3 mgVSS/L	0
User defined 4 mgISS/L	0
Dissolved oxygen mg/L	0
Flow	5.5E-6

Configuration information for all Dewatering unit units

Operating data Average (flow/time weighted as required)

Element name	Split method	Average Split specification
Dewatering unit6	Flow paced	5.00 %

Element name	Percent removal
Dewatering unit6	60.00

Configuration information for all Splitter units

Operating data Average (flow/time weighted as required)

Element name	Split method	Average Split specification
Splitter9	Flowrate [Side]	0.0109749319553991
Splitter11	Flow paced	200.00 %

Configuration information for all Stream (SV) Influent units

Operating data Average (flow/time weighted as required)

Element name	Methanol
Ordinary heterotrophic organisms (OHO) mgCOD/L	0
Methylotrophs mgCOD/L	0
Ammonia oxidizing biomass (AOB) mgCOD/L	0
Nitrite oxidizing biomass (NOB) mgCOD/L	0
Anaerobic ammonia oxidizers (AAO) mgCOD/L	0
Polyphosphate accumulating organisms (PAO) mgCOD/L	0
Propionic acetogens mgCOD/L	0
Methanogens - acetoclastic mgCOD/L	0
Methanogens - hydrogenotrophic mgCOD/L	0
Endogenous products mgCOD/L	0
Slowly bio. COD (part.) mgCOD/L	0
Slowly bio. COD (colloid.) mgCOD/L	0
Part. inert. COD mgCOD/L	0
Part. bio. org. N mgN/L	0
Part. bio. org. P mgP/L	0
Part. inert N mgN/L	0
Part. inert P mgP/L	0
Stored PHA mgCOD/L	0
Releasable stored polyP mgP/L	0
Fixed stored polyP mgP/L	0
Readily bio. COD (complex) mgCOD/L	0
Acetate mgCOD/L	0
Propionate mgCOD/L	0
Methanol mgCOD/L	1188000.00
Dissolved H2 mgCOD/L	0
Dissolved methane mg/L	0
Ammonia N mgN/L	0
Sol. bio. org. N mgN/L	0
Nitrous Oxide N mgN/L	0
Nitrite N mgN/L	0
Nitrate N mgN/L	0
Dissolved nitrogen gas mgN/L	0

PO4-P (Sol. & Me Complexed) mgP/L	0
Sol. inert COD mgCOD/L	0
Sol. inert TKN mgN/L	0
ISS Influent mgISS/L	0
Struvite mgISS/L	0
Hydroxy-dicalcium-phosphate mgISS/L	0
Hydroxy-apatite mgISS/L	0
Magnesium mg/L	0
Calcium mg/L	0
Metal mg/L	0
Other Cations (strong bases) meq/L	0
Other Anions (strong acids) meq/L	0
Total CO2 mmol/L	0
User defined 1 mg/L	0
User defined 2 mg/L	0
User defined 3 mgVSS/L	0
User defined 4 mgISS/L	0
Dissolved oxygen mg/L	0
Flow	9.6E-6

BioWin Album

Album page

Elements	Liquid volume [Mil. Gal]	Flow [mgd]	Total Carbonaceous BOD [mg/L]	Total suspended solids [mgTSS/L]	Volatile suspended solids [mgVSS/L]	Total Kjeldahl Nitrogen [mgN/L]	Ammonia N [mgN/L]	Nitrite + Nitrate [mgN/L]	Total N [mgN/L]	Total P [mgP/L]	PO4-P (Sol. & Me Complexed) [mgP/L]	Soluble PO4-P [mgP/L]
Influent	0	0.40	260.65	255.40	209.71	56.90	37.55	0	56.90	7.17	3.58	3.58
Anox 1	0.05	1.45	874.86	2900.28	2010.70	185.13	11.47	0.76	185.89	93.33	39.41	1.71
Oxic 1	0.07	1.45	860.33	2890.08	1999.45	177.90	3.87	7.78	185.67	93.33	39.32	1.63
Oxic 2	0.07	1.45	847.37	2878.40	1987.14	174.39	0.49	11.11	185.51	93.33	39.38	1.68
Anox 2	0.10	0.65	836.24	2868.28	1977.33	174.31	1.63	0.58	174.89	93.33	39.50	1.80
Oxic 3	0.03	0.65	826.22	2858.08	1967.06	172.81	0.18	1.97	174.78	93.33	39.71	2.01
Effluent	0	0.39	1.45	2.10	1.44	2.51	0.18	1.97	4.48	0.25	0.21	0.18
WAS	0	0.01	2230.38	7743.01	5313.47	462.74	0.18	1.97	464.71	251.78	106.94	0.18

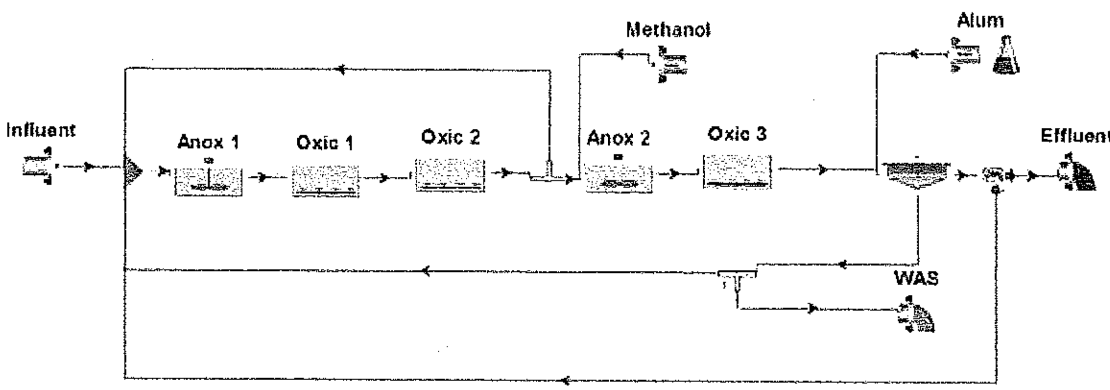
BioWin user and configuration data

Project details
Project name: *Dripping SpringsProject ref.: 9756A.00*
Plant name: Dripping Springs WWTPUser name: TRW

Created: 3/10/2015Saved: 10/16/2015

Steady state solution
Target SRT: 6.00 daysSRT #0: 5.95 days
Temperature: 18.0°C

Flowsheet



Configuration information for all Bioreactor units

Physical data

Element name	Volume [Mil. Gal]	Area [ft2]	Depth [ft]
Anox 1	0.0523	451.2366	15.500
Anox 2	0.0979	844.6283	15.500
Oxic 1	0.0738	636.3626	15.500
Oxic 3	0.0295	254.5450	15.500
Oxic 2	0.0738	668.0859	14.764

Operating data Average (flow/time weighted as required)

Element name	Average DO Setpoint [mg/L]
Anox 1	0
Anox 2	0
Oxic 1	2.0
Oxic 3	2.0

Oxic 2	2.0

Configuration information for all Ideal clarifier units

Physical data

Element name	Volume [Mil. Gal]	Area [ft2]	Depth [ft]
Ideal clarifier5	0.3500	3019.0000	15.500

Operating data Average (flow/time weighted as required)

Element name	Split method	Average Split specification
Ideal clarifier5	Flow paced	60.00 %

Element name	Average Temperature	Reactive	Percent removal	Blanket fraction
Ideal clarifier5	Uses global setting	No	99.89	0.05

Configuration information for all COD Influent units

Operating data Average (flow/time weighted as required)

Element name	Influent
Time	0
Flow	0.4975
Total COD mgCOD/L	530.20
Total Kjeldahl Nitrogen mgN/L	56.90
Total P mgP/L	7.17
Nitrate N mgN/L	0
pH	7.30
Alkalinity mmol/L	6.99
ISS Influent mgISS/L	45.00
Calcium mg/L	80.00
Magnesium mg/L	15.00
Dissolved oxygen mg/L	0

Element name	Influent
Fbs - Readily biodegradable (including Acetate) [gCOD/g of total COD]	0.1383
Fac - Acetate [gCOD/g of readily biodegradable COD]	0.1500
Fxsp - Non-colloidal slowly biodegradable [gCOD/g of slowly degradable COD]	0.7791
Fus - Unbiodegradable soluble [gCOD/g of total COD]	0.0500
Fup - Unbiodegradable particulate [gCOD/g of total COD]	0.1855
Fna - Ammonia [gNH3-N/gTKN]	0.6836
Fnox - Particulate organic nitrogen [gN/g Organic N]	0.5798
Fnus - Soluble unbiodegradable TKN [gN/gTKN]	0.0200
FupN - N:COD ratio for unbiodegradable part. COD [gN/gCOD]	0.0256
Fpo4 - Phosphate [gPO4-P/gTP]	0.4015
FupP - P:COD ratio for unbiodegradable part. COD [gP/gCOD]	0.0110
FZbh - OHO COD fraction [gCOD/g of total COD]	0.0200
FZbm - Methylotroph COD fraction [gCOD/g of total COD]	1.000E-4
FZaob - AOB COD fraction [gCOD/g of total COD]	1.000E-4
FZnob - NOB COD fraction [gCOD/g of total COD]	1.000E-4
FZaao - AAO COD fraction [gCOD/g of total COD]	1.000E-4

FZbp - PAO COD fraction [gCOD/g of total COD]	1.000E-4
FZbpa - Propionic acetogens COD fraction [gCOD/g of total COD]	1.000E-4
FZbam - Acetoclastic methanogens COD fraction [gCOD/g of total COD]	1.000E-4
FZbhm - H2-utilizing methanogens COD fraction [gCOD/g of total COD]	1.000E-4
FZe - Endogenous products COD fraction [gCOD/g of total COD]	0

Configuration information for all Metal addition units

Operating data Average (flow/time weighted as required)

Element name	Alum
Ordinary heterotrophic organisms (OHO) mgCOD/L	0
Methylotrophs mgCOD/L	0
Ammonia oxidizing biomass (AOB) mgCOD/L	0
Nitrite oxidizing biomass (NOB) mgCOD/L	0
Anaerobic ammonia oxidizers (AAO) mgCOD/L	0
Polyphosphate accumulating organisms (PAO) mgCOD/L	0
Propionic acetogens mgCOD/L	0
Methanogens - acetoclastic mgCOD/L	0
Methanogens - hydrogenotrophic mgCOD/L	0
Endogenous products mgCOD/L	0
Slowly bio. COD (part.) mgCOD/L	0
Slowly bio. COD (colloid.) mgCOD/L	0
Part. inert. COD mgCOD/L	0
Part. bio. org. N mgN/L	0
Part. bio. org. P mgP/L	0
Part. inert N mgN/L	0
Part. inert P mgP/L	0
Stored PHA mgCOD/L	0
Releasable stored polyP mgP/L	0
Fixed stored polyP mgP/L	0
Readily bio. COD (complex) mgCOD/L	0
Acetate mgCOD/L	0
Propionate mgCOD/L	0
Methanol mgCOD/L	0
Dissolved H2 mgCOD/L	0
Dissolved methane mg/L	0
Ammonia N mgN/L	0
Sol. bio. org. N mgN/L	0
Nitrous Oxide N mgN/L	0
Nitrite N mgN/L	0
Nitrate N mgN/L	0
Dissolved nitrogen gas mgN/L	0
PO4-P (Sol. & Me Complexed) mgP/L	0
Sol. inert COD mgCOD/L	0
Sol. inert TKN mgN/L	0
ISS Influent mgISS/L	0
Struvite mgISS/L	0
Hydroxy-dicalcium-phosphate mgISS/L	0
Hydroxy-apatite mgISS/L	0
Magnesium mg/L	0
Calcium mg/L	0
Metal mg/L	150000.00
Other Cations (strong bases) meq/L	5.00
Other Anions (strong acids) meq/L	16697.46
Total CO2 mmol/L	7.00
User defined 1 mg/L	0
User defined 2 mg/L	0
User defined 3 mgVSS/L	0
User defined 4 mgISS/L	0
Dissolved oxygen mg/L	0
Flow	7E-6

Configuration information for all Dewatering unit units

Operating data Average (flow/time weighted as required)

Element name	Split method	Average Split specification
Dewatering unit6	Flow paced	5.00 %

Element name	Percent removal
Dewatering unit6	60.00

Configuration information for all Splitter units

Operating data Average (flow/time weighted as required)

Element name	Split method	Average Split specification
Splitter9	Flowrate [Side]	0.0108883293734152
Splitter11	Flow paced	200.00 %

Configuration information for all Stream (SV) Influent units

Operating data Average (flow/time weighted as required)

Element name	Methanol
Ordinary heterotrophic organisms (OHO) mgCOD/L	0
Methylotrophs mgCOD/L	0
Ammonia oxidizing biomass (AOB) mgCOD/L	0
Nitrite oxidizing biomass (NOB) mgCOD/L	0
Anaerobic ammonia oxidizers (AAO) mgCOD/L	0
Polyphosphate accumulating organisms (PAO) mgCOD/L	0
Propionic acetogens mgCOD/L	0
Methanogens - acetoclastic mgCOD/L	0
Methanogens - hydrogenotrophic mgCOD/L	0
Endogenous products mgCOD/L	0
Slowly bio. COD (part.) mgCOD/L	0
Slowly bio. COD (colloid.) mgCOD/L	0
Part. inert. COD mgCOD/L	0
Part. bio. org. N mgN/L	0
Part. bio. org. P mgP/L	0
Part. inert N mgN/L	0
Part. inert P mgP/L	0
Stored PHA mgCOD/L	0
Releasable stored polyP mgP/L	0
Fixed stored polyP mgP/L	0
Readily bio. COD (complex) mgCOD/L	0
Acetate mgCOD/L	0
Propionate mgCOD/L	0
Methanol mgCOD/L	1188000.00
Dissolved H2 mgCOD/L	0
Dissolved methane mg/L	0
Ammonia N mgN/L	0
Sol. bio. org. N mgN/L	0
Nitrous Oxide N mgN/L	0
Nitrite N mgN/L	0
Nitrate N mgN/L	0
Dissolved nitrogen gas mgN/L	0

PO4-P (Sol. & Me Complexed) mgP/L	0
Sol. inert COD mgCOD/L	0
Sol. inert TKN mgN/L	0
ISS Influent mgISS/L	0
Struvite mgISS/L	0
Hydroxy-dicalcium-phosphate mgISS/L	0
Hydroxy-apatite mgISS/L	0
Magnesium mg/L	0
Calcium mg/L	0
Metal mg/L	0
Other Cations (strong bases) meq/L	0
Other Anions (strong acids) meq/L	0
Total CO2 mmol/L	0
User defined 1 mg/L	0
User defined 2 mg/L	0
User defined 3 mgVSS/L	0
User defined 4 mgISS/L	0
Dissolved oxygen mg/L	0
Flow	1.19986939334477E-5

BioWin Album

Album page

Elements	Liquid volume [Mil. Gal]	Flow [mgd]	Total Carbonaceous BOD [mg/L]	Total suspended solids [mgTSS/L]	Volatile suspended solids [mgVSS/L]	Total Kjeldahl Nitrogen [mgN/L]	Ammonia N [mgN/L]	Nitrite + Nitrate [mgN/L]	Total N [mgN/L]	Total P [mgP/L]	Soluble PO4-P [mgP/L]
Influent	0	0.50	240.54	271.23	225.54	56.90	38.90	0	56.90	7.17	2.88
Anox 1	0.05	1.80	1019.22	3811.75	2702.47	219.18	11.56	2.54	221.72	119.28	1.23
Oxic 1	0.07	1.80	1006.03	3802.36	2692.15	211.88	3.94	9.64	221.52	119.28	1.22
Oxic 2	0.07	1.80	994.01	3791.51	2680.71	208.31	0.50	13.06	221.36	119.28	1.30
Anox 2	0.10	0.81	982.81	3781.33	2670.71	208.22	1.58	2.01	210.23	119.28	1.44
Oxic 3	0.03	0.81	973.34	3771.68	2660.96	206.78	0.17	3.35	210.13	119.28	1.64
Effluent	0	0.49	1.58	2.77	1.95	2.53	0.17	3.35	5.89	0.10	0.01
WAS	0	0.01	2636.83	10244.98	7212.73	556.40	0.17	3.35	559.75	323.30	0.01

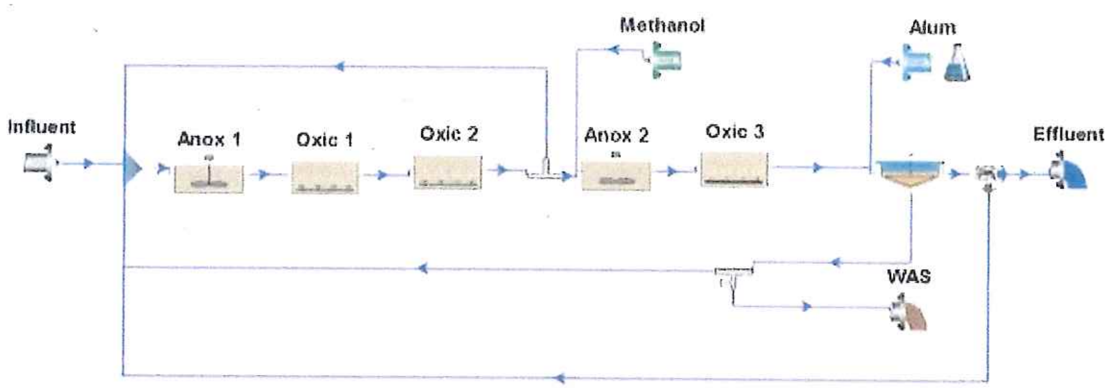
BioWin user and configuration data

Project details
Project name: Dripping SpringsProject ref.: 9756A.00
Plant name: Dripping Springs WWTPUser name: TRW

Created: 3/10/2015Saved: 10/16/2015

Target SRT: 6.00 daysSRT: ** days**
Temperature: 18.0°C

Flowsheet



Configuration information for all Bioreactor units

Physical data

Element name	Volume [Mil. Gal]	Area [ft2]	Depth [ft]
Anox 1	0.1046	902.4732	15.500
Anox 2	0.1959	1689.5498	15.500
Oxic 1	0.1476	1272.7252	15.500
Oxic 3	0.0590	509.1073	15.500
Oxic 2	0.1476	1336.1718	14.764

Operating data Average (flow/time weighted as required)

Element name	Average DO Setpoint [mg/L]
Anox 1	0
Anox 2	0
Oxic 1	2.0
Oxic 3	2.0
Oxic 2	2.0

Configuration information for all Ideal clarifier units

Physical data

Element name	Volume [Mil. Gal]	Area [ft2]	Depth [ft]
Ideal clarifier5	0.7001	6038.0000	15.500

Operating data Average (flow/time weighted as required)

Element name	Split method	Average Split specification
Ideal clarifier5	Flow paced	60.00 %

Element name	Average Temperature	Reactive	Percent removal	Blanket fraction
Ideal clarifier5	Uses global setting	No	99.89	0.05

Configuration information for all COD Influent units

Operating data Average (flow/time weighted as required)

Element name	Influent
Time	0
Flow	0.995
Total COD mgCOD/L	530.20
Total Kjeldahl Nitrogen mgN/L	56.90
Total P mgP/L	7.17
Nitrate N mgN/L	0
pH	7.30
Alkalinity mmol/L	6.99
ISS Influent mgISS/L	45.00
Calcium mg/L	80.00
Magnesium mg/L	15.00
Dissolved oxygen mg/L	0

Element name	Influent
Fbs - Readily biodegradable (including Acetate) [gCOD/g of total COD]	0.1600
Fac - Acetate [gCOD/g of readily biodegradable COD]	0.1500
Fxsp - Non-colloidal slowly biodegradable [gCOD/g of slowly degradable COD]	0.7500
Fus - Unbiodegradable soluble [gCOD/g of total COD]	0.0500
Fup - Unbiodegradable particulate [gCOD/g of total COD]	0.1300
Fna - Ammonia [gNH3-N/gTKN]	0.6600
Fnox - Particulate organic nitrogen [gN/g Organic N]	0.5000
Fnus - Soluble unbiodegradable TKN [gN/gTKN]	0.0200
FupN - N:COD ratio for unbiodegradable part. COD [gN/gCOD]	0.0350
Fpo4 - Phosphate [gPO4-P/gTP]	0.5000
FupP - P:COD ratio for unbiodegradable part. COD [gP/gCOD]	0.0110
FZbh - OHO COD fraction [gCOD/g of total COD]	0.0200
FZbm - Methylotroph COD fraction [gCOD/g of total COD]	1.000E-4
FZaob - AOB COD fraction [gCOD/g of total COD]	1.000E-4
FZnob - NOB COD fraction [gCOD/g of total COD]	1.000E-4
FZaao - AAO COD fraction [gCOD/g of total COD]	1.000E-4
FZbp - PAO COD fraction [gCOD/g of total COD]	1.000E-4
FZbpa - Propionic acetogens COD fraction [gCOD/g of total COD]	1.000E-4
FZbam - Acetoclastic methanogens COD fraction [gCOD/g of total COD]	1.000E-4
FZbhm - H2-utilizing methanogens COD fraction [gCOD/g of total COD]	1.000E-4

FZe - Endogenous products COD fraction [gCOD/g of total COD]	0

Configuration information for all Metal addition units

Operating data Average (flow/time weighted as required)

Element name	Alum
Ordinary heterotrophic organisms (OHO) mgCOD/L	0
Methylotrophs mgCOD/L	0
Ammonia oxidizing biomass (AOB) mgCOD/L	0
Nitrite oxidizing biomass (NOB) mgCOD/L	0
Anaerobic ammonia oxidizers (AAO) mgCOD/L	0
Polyphosphate accumulating organisms (PAO) mgCOD/L	0
Propionic acetogens mgCOD/L	0
Methanogens - acetoclastic mgCOD/L	0
Methanogens - hydrogenotrophic mgCOD/L	0
Endogenous products mgCOD/L	0
Slowly bio. COD (part.) mgCOD/L	0
Slowly bio. COD (colloid.) mgCOD/L	0
Part. inert. COD mgCOD/L	0
Part. bio. org. N mgN/L	0
Part. bio. org. P mgP/L	0
Part. inert N mgN/L	0
Part. inert P mgP/L	0
Stored PHA mgCOD/L	0
Releasable stored polyP mgP/L	0
Fixed stored polyP mgP/L	0
Readily bio. COD (complex) mgCOD/L	0
Acetate mgCOD/L	0
Propionate mgCOD/L	0
Methanol mgCOD/L	0
Dissolved H2 mgCOD/L	0
Dissolved methane mg/L	0
Ammonia N mgN/L	0
Sol. bio. org. N mgN/L	0
Nitrous Oxide N mgN/L	0
Nitrite N mgN/L	0
Nitrate N mgN/L	0
Dissolved nitrogen gas mgN/L	0
PO4-P (Sol. & Me Complexed) mgP/L	0
Sol. inert COD mgCOD/L	0
Sol. inert TKN mgN/L	0
ISS Influent mgISS/L	0
Struvite mgISS/L	0
Hydroxy-dicalcium-phosphate mgISS/L	0
Hydroxy-apatite mgISS/L	0
Magnesium mg/L	0
Calcium mg/L	0
Metal mg/L	150000.00
Other Cations (strong bases) meq/L	5.00
Other Anions (strong acids) meq/L	16697.46
Total CO2 mmol/L	7.00
User defined 1 mg/L	0
User defined 2 mg/L	0
User defined 3 mgVSS/L	0
User defined 4 mgISS/L	0
Dissolved oxygen mg/L	0
Flow	1.40011179760618E-5

Configuration information for all Dewatering unit units

Operating data Average (flow/time weighted as required)

Element name	Split method	Average Split specification
Dewatering unit6	Flow paced	5.00 %

Element name	Percent removal
Dewatering unit6	60.00

Configuration information for all Splitter units

Operating data Average (flow/time weighted as required)

Element name	Split method	Average Split specification
Splitter9	Flowrate [Side]	0.0217890320120031
Splitter11	Flow paced	200.00 %

Configuration information for all Stream (SV) Influent units

Operating data Average (flow/time weighted as required)

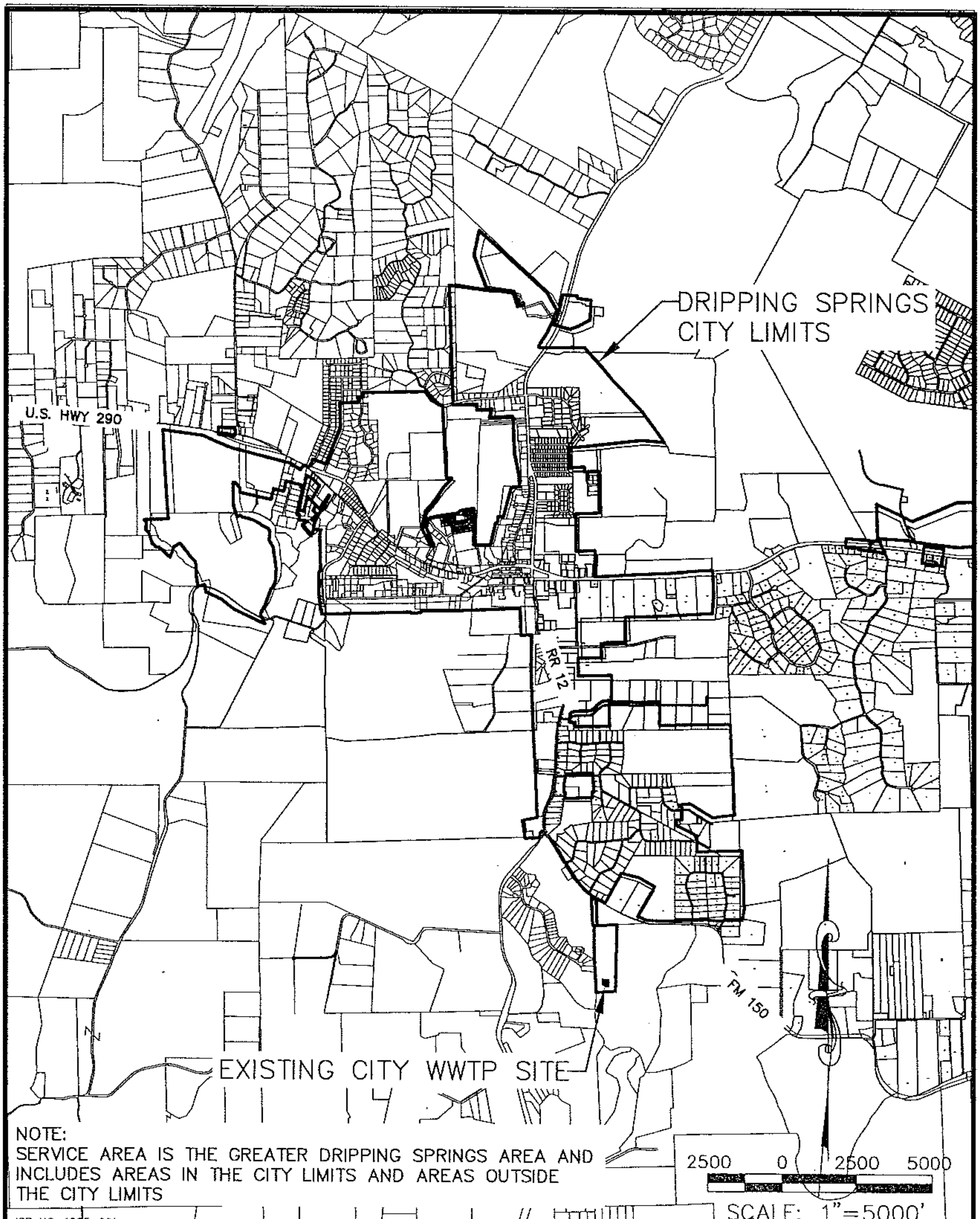
Element name	Methanol
Ordinary heterotrophic organisms (OHO) mgCOD/L	0
Methylotrophs mgCOD/L	0
Ammonia oxidizing biomass (AOB) mgCOD/L	0
Nitrite oxidizing biomass (NOB) mgCOD/L	0
Anaerobic ammonia oxidizers (AAO) mgCOD/L	0
Polyphosphate accumulating organisms (PAO) mgCOD/L	0
Propionic acetogens mgCOD/L	0
Methanogens - acetoclastic mgCOD/L	0
Methanogens - hydrogenotrophic mgCOD/L	0
Endogenous products mgCOD/L	0
Slowly bio. COD (part.) mgCOD/L	0
Slowly bio. COD (colloid.) mgCOD/L	0
Part. inert. COD mgCOD/L	0
Part. bio. org. N mgN/L	0
Part. bio. org. P mgP/L	0
Part. inert N mgN/L	0
Part. inert P mgP/L	0
Stored PHA mgCOD/L	0
Releasable stored polyP mgP/L	0
Fixed stored polyP mgP/L	0
Readily bio. COD (complex) mgCOD/L	0
Acetate mgCOD/L	0
Propionate mgCOD/L	0
Methanol mgCOD/L	1188000.00
Dissolved H2 mgCOD/L	0
Dissolved methane mg/L	0
Ammonia N mgN/L	0
Sol. bio. org. N mgN/L	0
Nitrous Oxide N mgN/L	0
Nitrite N mgN/L	0
Nitrate N mgN/L	0
Dissolved nitrogen gas mgN/L	0
PO4-P (Sol. & Me Complexed) mgP/L	0
Sol. inert COD mgCOD/L	0
Sol. inert TKN mgN/L	0
ISS Influent mgISS/L	0
Struvite mgISS/L	0

Hydroxy-dicalcium-phosphate mgISS/L	0
Hydroxy-apatite mgISS/L	0
Magnesium mg/L	0
Calcium mg/L	0
Metal mg/L	0
Other Cations (strong bases) meq/L	0
Other Anions (strong acids) meq/L	0
Total CO2 mmol/L	0
User defined 1 mg/L	0
User defined 2 mg/L	0
User defined 3 mgVSS/L	0
User defined 4 mgISS/L	0
Dissolved oxygen mg/L	0
Flow	2.4E-5

BioWin Album

Album page

Elements	Liquid volume [Mil. Gal]	Flow [mgd]	Total Carbonaceous BOD [mg/L]	Total suspended solids [mgTSS/L]	Volatile fatty acids [mg/L]	Total Kjeldahl Nitrogen [mgN/L]	Ammonia N [mgN/L]	Nitrite + Nitrate [mgN/L]	Total N [mgN/L]	Total P [mgP/L]	Soluble PO4-P [mgP/L]
Influent	0	0.99	260.65	255.40	12.72	56.90	37.55	0	56.90	7.17	3.58
Anox 1	0.10	3.61	1083.00	3620.74	0.39	227.57	11.46	0.83	228.40	117.50	1.70
Oxic 1	0.15	3.61	1068.71	3610.69	0.01	220.33	3.92	7.85	228.18	117.50	1.63
Oxic 2	0.15	3.61	1055.76	3598.98	0.00	216.81	0.50	11.21	228.02	117.50	1.68
Anox 2	0.20	1.62	1044.51	3588.76	0.09	216.73	1.59	0.57	217.30	117.49	1.79
Oxic 3	0.06	1.62	1034.21	3578.30	0.00	215.32	0.17	1.88	217.19	117.49	1.98
Effluent	0	0.97	1.64	2.63	0.00	2.54	0.17	1.88	4.41	0.20	0.12
WAS	0	0.02	2801.77	9722.35	0.00	579.56	0.17	1.88	581.44	318.27	0.12



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Registration # F-3053

CITY OF DRIPPING SPRINGS

SOUTH REGIONAL WASTEWATER SYSTEM

SERVICE AREA

ATTACHMENT 8

City of Dripping Springs
Effluent Monitoring Data

Date	WWTP Flow	Drip Flow	BOD	TSS	Ammonia as N	TKN	Nitrate/ Nitrite as N
January-12	53,832	57,963					
January 4, 2012			1	7			
January 10, 2012			2	3			
January 19, 2012			3	5			
January 24, 2012			3	4			
February-12	56,923	63,857					
February 3, 2012			5	8			
February 7, 2012			5	5			
February 15, 2012			4	8			
March-12	55,930	61,019					
March 4, 2012			3	12			
March 10, 2012			5	18			
March 19, 2012			25	11			
April-12	57,372	65,007					
April 4, 2012			6	9			
April 12, 2012			4	7			
April 17, 2012			3	5			
April 26, 2012			3	4			
May-12	55,421	61,290					
May 4, 2012			4	4	0.68	<0.50	40.6
May 9, 2012			2	4	0.16	1.66	37.1
May 18, 2012			4	<1	0.49	<0.5	29.2
May 25, 2012			3	4	<0.05	1.16	29.8
May 29, 2012			3	4	<0.05	<0.5	35.6
June-12	43,238	47,506					
June 7, 2012			4	4	0.11	<0.5	29.6
June 13, 2012			2	5	<0.05	1.33	33.1
June 18, 2012			1	4	<0.05	1.14	29
June 26, 2012			2	3	<0.05	1.34	20.6
July-12	45,087	47,306					
July 5, 2012			2	3	0.05	1.37	19.5
July 12, 2012			3	3	<0.05	1.24	23.6
July 17, 2012			2	1	<0.05	1.02	32.5
July 24, 2012			2	3	<0.05	0.83	37.7
August-12	49,696	54,237					
August 2, 2012			4	2	0.05	1.32	38.1
August 7, 2012			1	1	0.06	1.33	41.1
August 13, 2012			<1	2	0.11	<0.50	37.4
August 23, 2012			2	2	<0.05	0.9	30.3
August 29, 2012			2	3	0.05	1.22	33.7
September-12	59,793	62,178					
September 4, 2012			2	<2	<0.05	<0.50	34
September 7, 2012			1	1	<0.05	0.75	23.8
September 19, 2012			2	2	0.09	1.03	35.9
September 24, 2012			2	3	<0.05	0.99	32.1
October-12	58,225	60,500					
October 1, 2012			2	4	<0.05	<0.50	33.3
October 11, 2012			3	6	1.36	0.5	38
October 15, 2012			3	3	<0.05	<0.50	24.8
October 26, 2012			2	3	<0.05	1.28	10.8
October 29, 2012			2	3	<0.05	<0.50	19.3
November-12	51,442	57,161					
November 8, 2012			2	5	0.84	<0.50	17.5
November 16, 2012			3	7	0.93	1.5	14
November 19, 2012			4	2	0.05	<0.50	17.2
November 30, 2012			2	4	0.22	1.38	27
December-12	54,349	57,468					
December 5, 2012			<1	2	<0.05	<0.50	23.6
December 11, 2012			2	5	<0.05	1	25.6
December 17, 2012			2	3	<0.05	1.03	33.4
December 26, 2012			2	3	<0.05	<0.50	31.5

City of Dripping Springs
Effluent Monitoring Data

Date	WWTP Flow	Drip Flow	BOD	TSS	Ammonia as N	TKN	Nitrate/ Nitrite as N
January-13	53,984	57,718					
January 2, 2013			2	2	<0.05	1.1	44
January 7, 2013			2	3	<0.05	<0.50	41.5
January 16, 2013			2	4	<0.05	<0.50	25.6
January 23, 2013			2	3	1.25	<0.50	41.9
February-13	52,636	58,329					
February 1, 2013			2	3	<0.05	<0.50	31.9
February 6, 2013			1	2	<0.05	<0.50	40.6
February 13, 2013			4	4	7.32	9.25	21.4
February 19, 2013			2	4	<0.05	<0.50	13.9
February 28, 2013			2	5	<0.05	<0.50	18.4
March-13	46,513	48,165					
March 5, 2013			2	4	<0.05	1.26	38.1
March 13, 2013			2	3	<0.05	<0.50	36.7
March 22, 2013			3	7	3.05	2.77	20.7
March 26, 2013			3	7	0.16	<0.50	23.4
April-13	53,088	57,578					
April 1, 2013			4	6	<0.05	<0.50	25.2
April 11, 2013			5	6	16.1	16.8	0.9
April 18, 2013			4	6	2.36	4.69	3.3
April 23, 2013			2	4	<.05	1.36	14.4
May-13	56,390	59,531					
May 2, 2013			4	6	8	8.3	0.11
May 7, 2013			4	7	2.7	4.36	0.7
May 15, 2013			3	6	1.65	3.31	0.29
May 23, 2013			2	3	<.05	<.5	3.03
May 27, 2013			4	3	<.05	0.78	2.05
June-13	51,034	58,144					
June 6, 2013			2	3	<.05	1.1	2.54
June 12, 2013			5	11	1.54	3.35	0.07
June 20, 2013			4	4	<.05	1	0.26
June 25, 2013			2	3	<.05	0.9	1.49
July-13	49,062	55,250					
July 5, 2013			2	4	<.05	1.12	0.55
July 10, 2013			3	5	0.15	1.28	0.06
July 16, 2013			4	8	1.65	3.3	0.11
July 23, 2013			2	4	<.05	1.12	1.23
July 30, 2013			2	4			
August-13	50,867	56,341					
August 1, 2013			1	3	0.16	1.36	1.19
August 12, 2013			2	3	<0.05	1.41	1
August 16, 2013			4	8	<0.05	1.04	0.64
August 22, 2013			2	6	<0.05	1.27	3.87
August 27, 2013			2	7	0.78	2.16	7.66
September-13	63,099	68,814					
September 5, 2013			2	4	3.36	4.9	2.2
September 12, 2013			3	8	2.44	4	2.85
September 16, 2013			4	8	2.89	4.39	3.39
September 27, 2013			4	6	4.38	5.8	1.01
October-13	67,669	71,340					
October 3, 2013			3	6	4.57	5.78	0.14
October 11, 2013			2	6	18	35.4	0.05
October 18, 2013			5	9	1.12	<0.5	
October 25, 2013			8	12	27.8	32.2	0.16
November-13	61,548	67,374					
November 1, 2013			3	5	13.3	13.7	0.13
November 5, 2013			3	6	11.5	13	0.15
November 15, 2013			5	9	18.1	17.2	0.06
November 21, 2013			6	6	21.2	22.1	0.08
November 26, 2013			4	4	9.2	11.8	4.19
December-13	53,489	56,608					

City of Dripping Springs
Effluent Monitoring Data

Date	WWTP Flow	Drip Flow	BOD	TSS	Ammonia as N	TKN	Nitrate/ Nitrite as N
December 4, 2013			2	3	2.01	3.12	2.06
December 10, 2013			2	2	1.27	2.27	5.6
December 17, 2013			2	3	1.46	3.05	2.32
December 27, 2013			2	3	<0.05	0.88	3.16
January-14	54,238	61,211					
January 2, 2014			2	3	<0.05	1.29	3.6
January 9, 2014			2	3	5.47	6.62	2
January 15, 2014			7	7	22.3	24.3	1.81
January 21, 2014			3	4	22.1	20.5	0
January 31, 2014			2	2	17.1	18.5	0.59
February-14	62,273	70,105					
February 7, 2014			2	2	20.4	21	0.31
February 13, 2014			1	2	14.7	14.7	0.34
February 21, 2014			4	8	21.1	21.4	0.8
February 28, 2014			6	3	14.7	15.5	0.05
March-14	55,033	60,116					
March 7, 2014			2	3	18.4	34.8	0.76
March 14, 2014			2	4	3.92	5.1	0.16
March 21, 2014			4	5	31.8	28.6	0.09
March 25, 2014			5	5	35.3	39.3	0.06
April-14	63,297	74,695					
April 3, 2014			6	7	45.9	45.8	0.08
April 11, 2014			7	5	33.5	34.9	0.08
April 17, 2014			4	4	29.7	33.3	0.32
April 22, 2014					19.9	23.3	0.07
April 29, 2014			3	4	30.7	32.3	0
May-14	79,875	81,473					
May-14			3	4			
May 8, 2014			3	2	39.5	40.2	0.17
May 14, 2014			3	3	30.7	33.2	0.14
May 22, 2014			4	6	43.1	41	0.1
May 29, 2014			1	4	25.2	23.9	0.11
June-14	61,955	72,934			33.1	35.8	0.16
June 4, 2014			1	1	30.2	32.5	0.22
June 11, 2014			1	1	22.1	22.3	0.07
June 17, 2014			1	4	11.7	13.7	4.67
June 25, 2014			13	4			
July-14	57,956	68,403					
July 3, 2014			2	2	12.7	15.5	0.25
July 8, 2014			2	2	7.79	9.08	0.32
July 17, 2014			5	7	24.5	26.2	0.15
July 22, 2014			4	7	18.3	17.4	0.15
August-14	59,756	61,058					
August 1, 2014			24	3	19.1	18.1	0.3
August 7, 2014			4	8	19.7	21.3	0.15
August 14, 2014			<1	9	8.85	8.2	0.65
August 19, 2014			2	10	16.9	16.7	0.15
August 28, 2014			<1	3	6.98	7.94	1.18
September-14	67,676	77,182					
September 4, 2014			4	4	14.2	16.4	0.08
September 9, 2014			4	4	20.7	21.4	0.07
September 18, 2014			3	6	27	27.2	0.21
September 24, 2014			3	5	22.3	21.6	0.07
October-14	61,491	75,435					
October 1, 2014			4	6	17.5	20.9	0.12
October 7, 2014			8	8			
October 9, 2014					14.7	16.4	0.1
October 15, 2014			3	4	5.04	5.64	7.77
October 24, 2014			6	6	3.09	4.96	0.91
October 31, 2014			3	4	5.79	8.21	0.49
November-14	64,703	72,608					

City of Dripping Springs
Effluent Monitoring Data

Date	WWTP Flow	Drip Flow	BOD	TSS	Ammonia as N	TKN	Nitrate/ Nitrite as N
November 7, 2014			2	2	1.66	3.04	2.14
November 14, 2014			1	3	4.31	5.41	1.36
November 20, 2014			1	2	5.06	6.63	0.47
November 26, 2014			1	4	<0.05	<0.50	7.73
December-14	55,554	60,884					
December 5, 2014			2	1	2.69	3.52	1.2
December 11, 2014			3	2	0.7	1.97	9.57
December 15, 2014			1	3	0.38	1.59	0.08
December 22, 2014			2	2	<0.05		
December 30, 2014			2	1	<0.05	<0.50	7.26
January-15	66,983	70,871					
January 5, 2015			3	<1	<0.05	<0.50	17.1
January 12, 2015			2	2	<0.05	<0.50	14.8
January 22, 2015			2	2	<0.05	1.14	7.58
January 29, 2015			<1	2	2.17	2.6	2.01
February-15	61,622	64,323					
February 2, 2015			2	2	<0.05	1	1.33
February 9, 2015			2	2	<0.05	<0.50	6.86
February 17, 2015			2	4	<0.05	1.17	1.53
February 23, 2015			2	3	<0.05	1.1	1.74
March-15	60,134	65,229					
March 2, 2015			1	1			
March 10, 2015			<1	2			
March 16, 2015			<1	3	1.61	2.29	0.34
March 26, 2015			8	12	8.31	10.7	0.06
March 31, 2015			1	5	5.81	6.59	0.2
April-15	66,453	53,703					
April 6, 2015			2	6	<0.05	1.63	0.85
April 13, 2015			2	9	7.96	9.4	0.21
April 20, 2015			2	4	0.59	1.29	0.55
April 28, 2015			2	2	3.91	5.32	0.39
May-15	94,258	87,864					
May 6, 2015			<1	5	2.52	3.5	0.73
May 12, 2015			1	6	1.99	2.26	0.52
May 19, 2015			<1	4	0.17	0.73	1.28
May 29, 2015			10	29	22.4	24.6	4.1
June-15	88,302	83,948					
June 2, 2015			<1	11	13.5	16.1	1.95
June 10, 2015			<1	11	<0.05	3.85	13.1
June 16, 2015			4	4	0.07	1.3	25
June 23, 2015			1	5	0.06	<0.50	21.5
June 29, 2015			2	2	0.08	<0.50	33.5
July-15	68,440	68,747					
July 6, 2015			2	4			
July 13, 2015			2	3			
July 20, 2015			9	17			
July 27, 2015			4	14			
August-15	58,064	53,897					
August 3, 2015			2	5			
August 11, 2015			2	7			
September 15, 2015			2	6	<0.05	<0.50	55.4
Average	59,417	63,661	3.0	3.2	7.1	8.2	11.0
Max	94,258	87,864	25	29	46	46	55
Count	43	43	186	186	165	164	163

Note: Non-detect Values were calculated as "0"

Email information for report date:
9/23/15 18:00

Y017204

PGMS

Attn: PGMS

26550 RR 12 STE 1
DRIPPING SPRINGS, TX 78620

Client Resources

We are continuing to update our on-line client services. Please contact us to set up an account to view results on-line. You may have noticed our website is currently under construction. Stay tuned for additions over the next few months.

Aqua-Tech values your opinion and encourages you to speak with our staff at 979-778-3707 ext. 4 or reporting@aqua-techlabs.com if you have questions.

Thank you for your business,
June M. Brien
Executive Technical Director

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The analyses summarized in this report were performed by Aqua-Tech Laboratories, Inc. unless otherwise noted. Aqua-Tech Laboratories, Inc. holds accreditation from the State of Texas in accordance with TNI and/or through the TCEQ Drinking Water Commercial Laboratory Approval Program.

The following prefixes to each analysis name indicate certification:

NELAP Cert. T104704371

NEL	NELAC accredited parameter.
ANR	Accreditation not required by the State of Texas.
DWP	Accreditation through the TCEQ Drinking Water Commercial Laboratory Approval Program.
INF	Aqua-Tech Laboratories, Inc. is not accredited for this parameter. It is reported on an informational basis only.

Any subcontracted data summarized in this report is indicated by "Sub" in the Lab column.

NELAP ACCREDITED TNI LABORATORY

TCEQ DW Lab ID TX 239

General Definitions:

NR	Not Reported.
RPD	Relative Percent Difference.
% R	Percent Recovery.
dry	Results with the "dry" unit designation are reported on a "dry weight" basis.
SQL	The Sample Quantitation Limit is the value below which the parameter cannot reliably be detected. The SQL includes all sample preparations, dilutions and / or concentrations.
Adj MDL	The Adjusted Method Detection Limit is the MDL value adjusted for any sample dilutions or concentrations .
MDL	The Method Detection Limit is the lowest theoretical value that is statistically different from zero for a specific method, taking into account all preparation steps and instrument settings.

All samples are reported on an "as received" basis unless the designation "dry" is added to the reported unit.

Copies of Aqua-Tech Laboratories, Inc. procedures and individual sampling plans are available upon request. Note that samples are collected by Aqua-Tech Laboratories, Inc. personnel unless otherwise noted in the "Sample Collected" field of this report as "Client" or "CLT".

Samples included in this report were received in acceptable condition according to Aqua -Tech Laboratories, Inc. procedures and 40 CFR, Chapter I, Subchapter D, Part 136.3, TABLE II. - *Required containers, preservation techniques, and holding times,* unless otherwise noted in this report.

This report was approved by:

June M. Brien
Technical Director

corp@aqua-techlabs.com www.aqua-techlabs.com

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Analytical Report

PGMS

Report Printed: 9/23/15 18:00

Y017204

Dripping Springs WWTP Effluent

Collected: 09/15/15 08:30 by CLIENT
Received: 09/15/15 11:06 by Kelly Kukowski

Type: Grab | Matrix: Non Potable | C-O-C #: Y017204

Lab ID# Y017204-01	Result	Units	Notes	MDL	Adj MDL	SQL	Lab	Analyzed	Method	Batch	
General Chemistry											
BOD (5 day)	2	mg/L		1	1	1	*Austin*	09/16/15 07:43 DC	SM5210 B, 2001	M061542	NEL
Total Suspended Solids	6	mg/L		1	1	1	*Austin*	09/17/15 09:41 SR	SM2540 D, 1997	M061586	NEL
Ammonia as N	<0.05	mg/L		0.03	0.03	0.05	*Bryan*	09/18/15 11:37 SSS	SM4500 NH3 G, 1997	M061638	NEL
Total Kjeldahl Nitrogen as N	<0.50	mg/L		0.16	0.16	0.50	*Bryan*	09/21/15 12:33 SSS	EPA 351.2	M061634	NEL
Nitrate/Nitrite as N	55.4	mg/L		0.03	0.85	1.25	*Bryan*	09/23/15 09:55 SSS	SM4500 NO3-F 2000	M061708	NEL
Nitrogen, Total	55.4	mg/L			1.75	1.75	*Bryan*	09/23/15 09:55 SSS	Calculation	[CALC]	ANR

Dripping Springs WWTP Influent

Collected: 09/15/15 08:30 by CLIENT
Received: 09/15/15 11:06 by Kelly Kukowski

Type: Grab | Matrix: Non Potable | C-O-C #: Y017204

Lab ID# Y017204-02	Result	Units	Notes	MDL	Adj MDL	SQL	Lab	Analyzed	Method	Batch	
General Chemistry											
BOD (5 day)	209	mg/L		1	78	78	*Austin*	09/16/15 07:43 DC	SM5210 B, 2001	M061542	NEL
Ammonia as N	41.0	mg/L		0.03	0.25	0.45	*Bryan*	09/18/15 11:37 SSS	SM4500 NH3 G, 1997	M061638	NEL
Total Kjeldahl Nitrogen as N	55.7	mg/L		0.16	1.64	5.00	*Bryan*	09/21/15 12:33 SSS	EPA 351.2	M061634	NEL
Nitrate/Nitrite as N	0.14	mg/L		0.03	0.03	0.05	*Bryan*	09/23/15 09:55 SSS	SM4500 NO3-F 2000	M061708	NEL
Metals (Total)											
Phosphorus-Total	6.59	mg/L		0.005	0.003	0.005	*Bryan*	09/22/15 18:12 JRB	EPA 200.7 R4.4	M061631	NEL

Dripping Springs WWTP Aeration

Collected: 09/15/15 08:30 by CLIENT
Received: 09/15/15 11:06 by Kelly Kukowski

Type: Grab | Matrix: Non Potable | C-O-C #: Y017204

Lab ID# Y017204-03	Result	Units	Notes	MDL	Adj MDL	SQL	Lab	Analyzed	Method	Batch	
General Chemistry											
Total Suspended Solids	4780	mg/L		1	250	250	*Austin*	09/16/15 13:38 SR	SM2540 D, 1997	M061558	NEL

Explanation of Notes

BOD-01	Dilution water blanks fell outside of acceptance criteria of 0.2 mg/L.
ICP-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
J	Analyte detected below the SQL but above the MDL.
MS-01	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
RPD-01	Duplicate RPD is outside acceptable range. Acceptance of run is not based on matrix QC.

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Austin, TX 78735
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General Chemistry - Quality Control

	Result	Units	Notes	SQL	Analyzed	Spike Amount	Source Result	%R	%R Limits	RPD	RPD Limit	Batch
Ammonia as N - SM4500 NH3 G, 1997												*Bryan*
Blank	<0.05	mg/L		0.05	09/18/15 11:37 SSS							M061638
LCS	0.54	mg/L		0.05	09/18/15 11:37 SSS	0.500		109	81.4 - 123			M061638
LCS Dup	0.55	mg/L		0.05	09/18/15 11:37 SSS	0.500		109	81.4 - 123	0.429	5.73	M061638
Matrix Spike	0.74	mg/L		0.05	09/18/15 11:37 SSS	0.500	0.22	104	77.2 - 127			M061638
Matrix Spike Dup	0.74	mg/L		0.05	09/18/15 11:37 SSS	0.500	0.22	104	77.2 - 127	0.655	11.2	M061638
Initial Cal Check	3.75	mg/L		0.05	09/18/15 11:37 SSS	3.36		112	85 - 115			1509121
BOD (5 day) - SM5210 B, 2001												*Austin*
Seed Blank	<1	mg/L	*BOD-01*	1	09/16/15 07:43 DC							M061542
Duplicate	204	mg/L		78	09/16/15 07:43 DC		187			8.70	29.9	M061542
GG Acid 198	169	mg/L		1	09/16/15 07:43 DC	198		85.4	84.6 - 115			M061542
GG Acid 198	193	mg/L		1	09/16/15 07:43 DC	198		97.5	84.6 - 115			M061542
Nitrate/Nitrite as N - SM4500 NO3-F 2000												*Bryan*
Blank	<0.05	mg/L		0.05	09/23/15 09:55 SSS							M061708
Matrix Spike	107	mg/L		1.25	09/23/15 09:55 SSS	50.0	55.4	103	84.9 - 115			M061708
Matrix Spike Dup	107	mg/L		1.25	09/23/15 09:55 SSS	50.0	55.4	103	84.9 - 115	0.0708	2.44	M061708
Initial Cal Check	0.53	mg/L		0.05	09/23/15 09:55 SSS	0.488		110	85 - 115			1509140
LCS	2.17	mg/L		0.05	09/23/15 11:57 SSS	2.00		108	92.9 - 108			M061708
LCS Dup	2.15	mg/L		0.05	09/23/15 11:57 SSS	2.00		108	92.9 - 108	0.762	2.4	M061708
Total Kjeldahl Nitrogen as N - EPA 351.2												*Bryan*
Blank	<0.50	mg/L	*J (0.19)*	0.50	09/21/15 12:33 SSS							M061634
LCS	3.90	mg/L		0.50	09/21/15 12:33 SSS	4.00		97.6	85.7 - 118			M061634
LCS Dup	3.94	mg/L		0.50	09/21/15 12:33 SSS	4.00		98.4	85.7 - 118	0.793	8.72	M061634
Matrix Spike	1.52	mg/L	*MS-01*	0.50	09/21/15 12:33 SSS	4.00	<0.50	*37.9*	87.3 - 127			M061634
Matrix Spike Dup	<0.50	mg/L	*MS-01, RPD-01*	0.50	09/21/15 12:33 SSS	4.00	<0.50		87.3 - 127		15.6	M061634
Reference	36.0	mg/L		2.50	09/21/15 12:33 SSS	34.8		103	85 - 115			M061634

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General Chemistry - Quality Control

	Result	Units	Notes	SQL	Analyzed	Spike Amount	Source Result	%R	%R Limits	RPD	RPD Limit	Batch
Total Suspended Solids - SM2540 D, 1997												*Austin*
Blank	<1	mg/L		1	09/16/15 13:38 SR							M061558
Blank	<1	mg/L		1	09/16/15 13:38 SR							M061558
Duplicate	8300	mg/L		1000	09/16/15 13:38 SR		8300			0.00	17	M061558
Duplicate	6800	mg/L		500	09/16/15 13:38 SR		6750			0.738	17	M061558
Reference	101	mg/L		10	09/16/15 13:38 SR	100		101	80.6 - 110			M061558
Blank	<1	mg/L		1	09/17/15 09:41 SR							M061586
Blank	<1	mg/L		1	09/17/15 09:41 SR							M061586
Duplicate	4150	mg/L		250	09/17/15 09:41 SR		4200			1.20	17	M061586
Duplicate	8300	mg/L		500	09/17/15 09:41 SR		8300			0.00	17	M061586
Reference	99	mg/L		10	09/17/15 09:41 SR	100		99.0	80.6 - 110			M061586

Metals (Total) - Quality Control

	Result	Units	Notes	SQL	Analyzed	Spike Amount	Source Result	%R	%R Limits	RPD	RPD Limit	Batch
Phosphorus-Total - EPA 200.7 R4.4												*Bryan*
Blank	<0.005	mg/L		0.005	09/22/15 17:50 JRB							M061631
LCS	2.41	mg/L		0.005	09/22/15 17:54 JRB	2.50		96.4	84.5 - 115.4			M061631
LCS Dup	2.44	mg/L		0.005	09/22/15 17:58 JRB	2.50		97.8	84.5 - 115.4	1.42	20	M061631
Duplicate	7.61	mg/L		0.005	09/22/15 18:01 JRB		6.59			14.4	20	M061631
Matrix Spike	10.4	mg/L	*ICP-4X*	0.005	09/22/15 18:08 JRB	2.50	6.59	*151*	69.5 - 130.4			M061631

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Sample Preparation Summary

Sample	Method	Prepared	Lab	Bottle	Initial	Units	Final	Units	External Dilution Factor	Batch
Y017204-01										
Ammonia as N	SM4500 NH3 G, 1997	9/18/15 11:37 SSS	Bryan	A	10.0	mL	10.0	mL	1	M061638
BOD (5 day)	SM5210 B, 2001	9/16/15 7:43 DC	Austin	B	300	mL	300	mL	1	M061542
Nitrate/Nitrite as N	SM4500 NO3-F 2000	9/23/15 9:55 SSS	Bryan	A	1.00	mL	25.0	mL	1	M061708
Total Kjeldahl Nitrogen as N	EPA 351.2	9/18/15 9:17 SSS	Bryan	A	25.0	mL	25.0	mL	1	M061634
Total Suspended Solids	SM2540 D, 1997	9/17/15 9:41 SR	Austin	C	1000	mL	1000	mL	1	M061586
Y017204-02										
Ammonia as N	SM4500 NH3 G, 1997	9/18/15 11:37 SSS	Bryan	A	1.00	mL	9.00	mL	1	M061638
BOD (5 day)	SM5210 B, 2001	9/16/15 7:43 DC	Austin	B	5.00	mL	300	mL	1	M061542
Nitrate/Nitrite as N	SM4500 NO3-F 2000	9/23/15 9:55 SSS	Bryan	A	10.0	mL	10.0	mL	1	M061708
Phosphorus-Total	EPA 200.7 R4.4	9/18/15 8:44 HNS	Bryan	C	50.0	mL	25.0	mL	1	M061631
Total Kjeldahl Nitrogen as N	EPA 351.2	9/18/15 9:17 SSS	Bryan	A	2.50	mL	25.0	mL	1	M061634
Y017204-03										
Total Suspended Solids	SM2540 D, 1997	9/16/15 13:38 SR	Austin	A	4.00	mL	1000	mL	1	M061558

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PGMS

C-O-C #
Y017204
Page 1 of 1
T1047043

Page 6 of 6 Y017204 ATL 090815B FIN Is 09 23 15 1800

Lab ID	Description	Start Date	Start Time	End Date	End Time	Composite Type	Container List (Checked box indicates bottle arrived in lab)
Y017204-01	Dripping Springs WWTP Effluent	9-15-2015	8:30 AM	- N/A -	- N/A -	Grab	☑ A AMM NO3 TKN 0.25LP H2SO4 <2 ☑ B BOD 1LP ☑ C TSS 2LP
Y Billing N Total Calc N Total Calc NP [CNR] TKN NP AUTO EPA 351.2 [NEL] NH3N NP AUTO SM 4500 G [NEL] A BOD NP Probe SM 5210 B [NEL] A TSS NP Grav SM 2540 D [NEL] NO3N + NO2N NP RFA SM4500 NO3 F [NEL]							
Y017204-02	Dripping Springs WWTP Influent			- N/A -	- N/A -	Grab	☑ A AMM NO3 TKN 0.25LP H2SO4 <2 ☑ B BOD 0.25LP ☑ C Metals 0.25LP HNO3 <2
A BOD NP Probe SM 5210 B [NEL] P NP ICP EPA 200.7 [NEL] NH3N NP AUTO SM 4500 G [NEL] TKN NP AUTO EPA 351.2 [NEL] NO3N + NO2N NP RFA SM4500 NO3 F [NEL]							
Y017204-03	Dripping Springs WWTP Aeration			- N/A -	- N/A -	Grab	☑ A TSS 0.1LP
A TSS NP Grav SM 2540 D [NEL]							

By relinquishing the above samples to ATL, the client agrees to the following terms: Samples will be analyzed by a method that is within ATL's NELAP fields of accreditation. Analytes requiring a certified method that is not within ATL's fields of accreditation w subcontracted to a NELAP accredited lab that is certified for that method. Clients will be notified of the subcontract lab's details. Other analytes not requiring accreditation will be analyzed by a compendial method. If a specific method is required, the client will note the me on this C-O-C. The client approves all method modifications documented by ATL or the subcontract lab. A current list of ATL's NELAP fields of accreditation and other methods are available on request.

Client Comments:

DEFINITIONS:

ATL = Aqua-Tech Laboratories, Inc.

Matrix designations:
NP = Non-Potable, DW = Drinking Water, SL = Solid

Analyses Ordered:
"A" prefix indicates Austin, all others Bryan or Subcontracted, indicated by [SUB]. Name format: Analysis-Matrix-Technology-Method.

[CNR] = No NELAP certification required or available
[INF] = Informational only (not NELAC certified)
[NEL] = NELAP certified parameter
[SUB] = NELAP certified subcontracted parameter

Reagent tracking is available upon request.

CUSTODY TRANSFER:

Sample Info: "X" all that ap

			Date	Time	
Relinquished by (print and sign): Curtis Brinkley Curtis Brinkley	☒ Sampler	☐ Client	9/15/2015	8:30AM	☒ Iced / Chilled / Refrigera ☐ Custody Sealed
Received by (print and sign)	☐ ATL Field	☐ Client			☐ Received Chilled / Iced ☐ Custody Transfer Unbroken
Relinquished by (print and sign)	☐ ATL Field	☐ Client			☐ Iced / Chilled / Refrigerated ☐ Custody Sealed
Received by (print and sign)	☐ ATL Field	☐ Client			☐ Received Chilled / Iced ☐ Custody Transfer Unbroken

SAMPLE RECEIPT SUMMARY FOR WORK ORDER Y017204

Do not write below this line (Laboratory use only)

Lab Comments:
* TR = Temp Read, CT = Corrected Temp.

			Date	Time	
Relinquished by (print and sign): Curtis Brinkley Curtis Brinkley	☐ ATL Field	☐ Client	09/15/15	11:06	☐ Iced / Chilled / Refrigerated ☐ Custody Sealed
Received by (print and sign): Kelly Kukowski	☒ Lab		09/15/15	11:06	☐ Received Chilled / Iced ☐ Custody Transfer Unbroken

Temperature, *TR/CT °C: 5.9 / 5.9
Thermometer ID: 0693597
Sample condition good? Yes
Preservation correct? Yes
pH Paper ID: 0673023
Post-Preservatives: N/A

Coupland Recovery Systems, LLC

12321 Waters Park RD Austin, TX. 78759

512-563-6242(Office) 512-347-7093(fax)

To: City of Dripping Springs - Wastewater Plant

Address: P.O. Box 384 Dripping Springs Texas 78620

Permit # WQ0014488001

Contact: Patrick C. King (Professional Management Services, Inc.) Ph# 512-894-3322

Dear Sir,

Coupland Recovery Systems manages a disposal site that will accept Wastewater Treatment Plant Sludge class (B). Windermere WWTP has given Authorization to Coupland Recovery Systems, LLC. Under an exclusive disposal agreement for Wastewater sludge disposal. All sludge must meet all parameters for class (B) sludge and will need analytical testing "TCLP". Sludge will only be accepted when hauled by a pre-approved transportation company authorized for disposal to the listed sites.

Site: -- Windermere Utilities Co – Permit # WQ0011931 - We have no plans to discontinue accepting Wastewater Sludge at this site and is expected to be open for the next five years.

Authorization for disposal of Wastewater Sludge is granted for City of Dripping Springs - Wastewater Plant

Authorizing Signature: Cary Juby 03/05/09

Cary Juby / Coupland Recovery Systems, LLC. Liquid waste receiving station manager.

Attachment 11

Treatment Plant Features

A. Emergency Power Requirements

Two (2) Emergency Generators will be utilized at the treatment plant. The generators will provide sufficient power for the following units:

1. Influent Lift Station Pumps
2. Mechanical Bar Screens
3. Aeration System (blowers and mixers)
4. Final Clarifier Drives
5. Return and Waste Activated Sludge Pumps
6. Effluent Filter Drives and Pumps
7. Chlorination System
8. Treated Effluent Pump Station
9. Chemical feed Systems
10. Lighting Panels and Controls

Automatic transfer switches will be included to transfer electrical loads to the generators during power outages. In accordance with 30 TAC §217.37, the disinfection system will automatically restart during a power outage and upon transfer back to the main power source.

B. Alarm Features

The new WWTP and retrofitted WWTP will be equipped with the following alarms which will be connected to an auto-dialer to alert facility personnel of the following conditions:

1. Power Outage
2. Influent Lift Station Pump Failure To Start
3. Influent Lift Station Pump Seal Failure
4. High And Low Level In The Influent Lift Station
5. Mechanical Bar Screen Failure
6. Mechanical Bar Screen Channel High Level
7. Blower Failure
8. Mechanical Mixer Failure
9. Final Clarifier Torque Overload
10. Effluent Filter Pump Failure
11. High Level in Effluent Filter Tank
12. Chlorine Leak Detection
13. High Or Low Chlorine Residual
14. Treated Effluent Transfer Pump Failure To Start
15. Treated Effluent Pump Seal Failure

16. Low Pressure in Treated Effluent Distribution System
17. High And Low Level In Treated Effluent Storage Tank

C. Design Features for Reliability And Operating Flexibility

1. Influent lift station: The influent lift station will include enough submersible pumps sized to meet peak flow pumping capacity with the largest unit out of service. Sonic level indicators will be used to automatically start and stop the pumps based on influent flows and rising and falling wet well levels. Level float switches will be used as a backup to the sonic level indicators.

2. Bar screen: The mechanical bar screen structure will include a bypass channel with a manual screen for use when needed.

4. Aeration basins: Multiple aeration basins will be included, each capable of continuous operation. Piping and valves will be included to allow each unit to be individually isolated for draining, cleaning, or repairs.

D. Overflow Prevention

The following design features will be used to prevent the overflow of wastewater from treatment units.

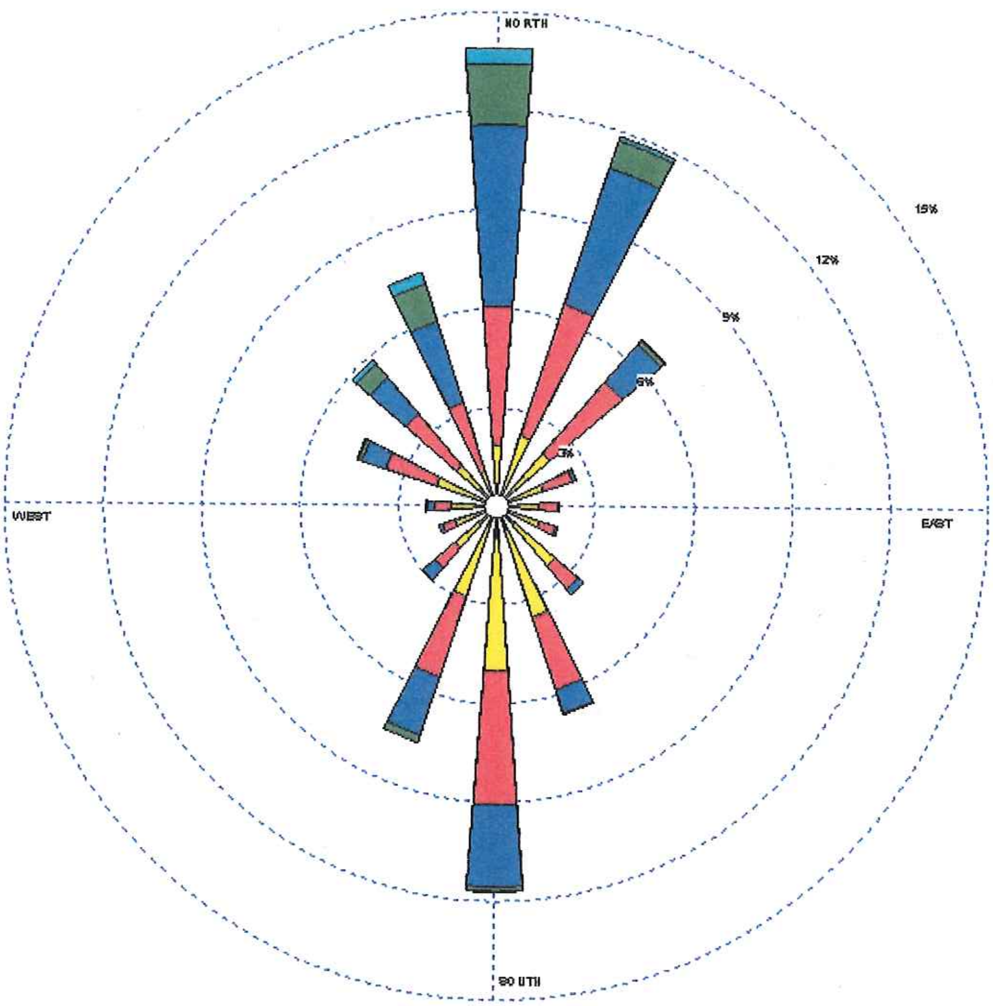
1. The facility design includes a peaking factor of 4.0 to insure adequate hydraulic capacity.

2. The influent lift station will be designed with the capacity to pump peak flow with the largest single pump out of service.

3. The facility hydraulic design, including piping, channels, weirs, troughs and other features, will be sized to allow the 2-hour peak flow to pass through the facility without exceeding minimum freeboard requirements with any single treatment unit out of service. In addition, overflow weirs will be included in common walls between digesters and aerations basins.

WIND ROSE PLOT

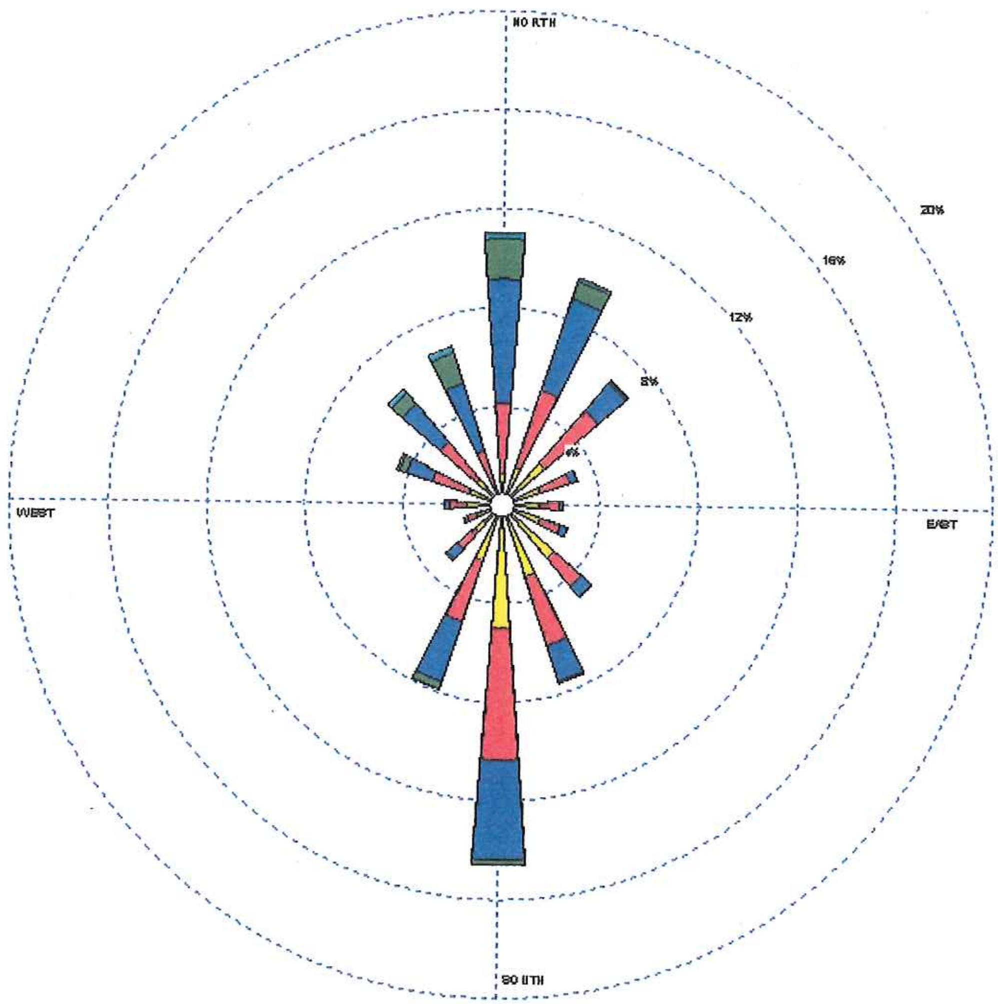
Station #13958 - AUSTIN/MUNICIPAL ARPT, TX



Wind Speed (m/s)	MODELER Sara West	DATE 8/29/2002	COMPANY NAME USDA-ARS
> 11.06 8.49 - 11.06	DISPLAY Wind Speed	UNIT m/s	COMMENTS
5.40 - 8.49 3.34 - 5.40	AVG. WIND SPEED 4.60 m/s	CALM WINDS 6.83%	
1.80 - 3.34 0.51 - 1.80	ORIENTATION Direction (blowing from)	PLOT YEAR-DATE-TIME 1961 Jan 1 - Jan 31 Midnight - 11 PM	

WIND ROSE PLOT

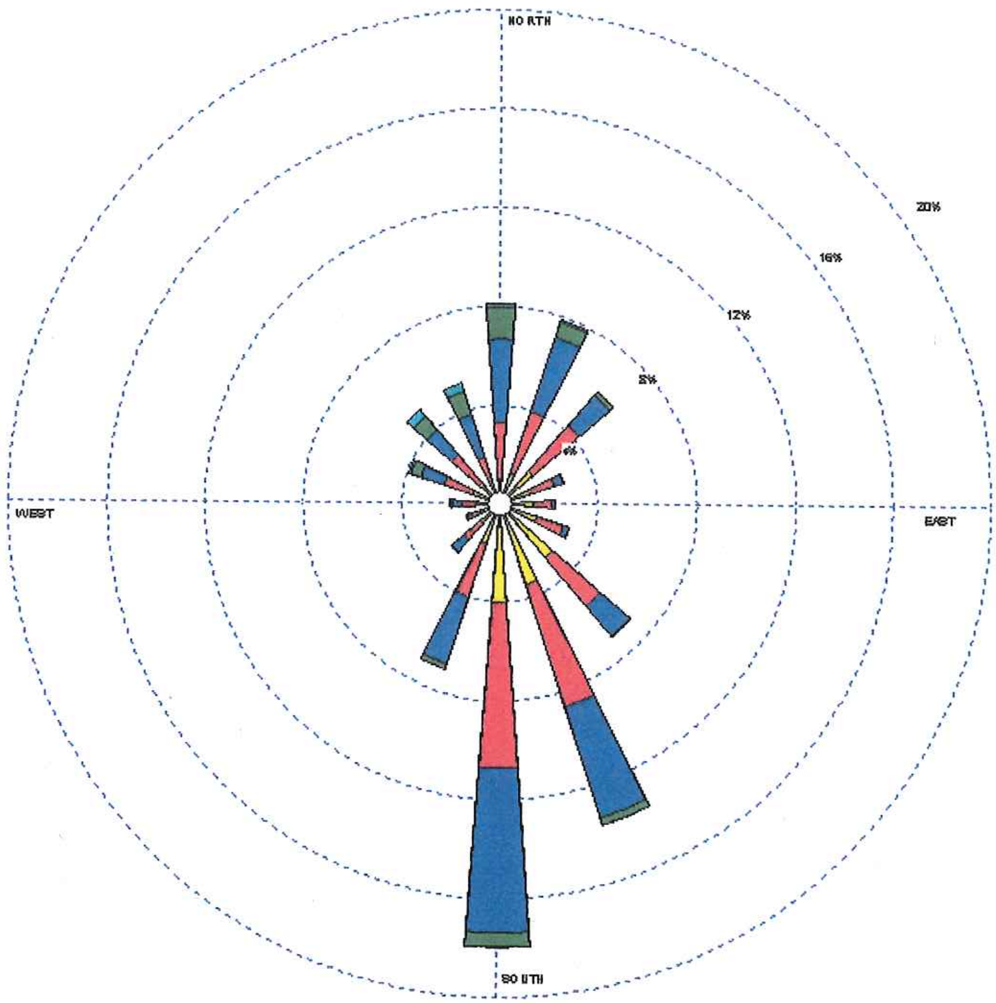
Station #13958 - AUSTIN/MUNICIPAL ARPT, TX



Wind Speed (m/s)	MODELER	DATE	COMPANY NAME
> 11.06	Sara West	8/29/2002	USDA-ARS
8.49 - 11.06	DISPLAY Wind Speed	UNIT m/s	COMMENTS
5.40 - 8.49	AVG. WIND SPEED 4.77 m/s	CALM WINDS 4.67%	
3.34 - 5.40			
1.80 - 3.34	ORIENTATION Direction (blowing from)	PLOT YEAR-DATE-TIME 1961 Feb 1 - Feb 29 Midnight - 11 PM	
0.51 - 1.80			

WIND ROSE PLOT

Station #13958 - AUSTIN/MUNICIPAL ARPT, TX

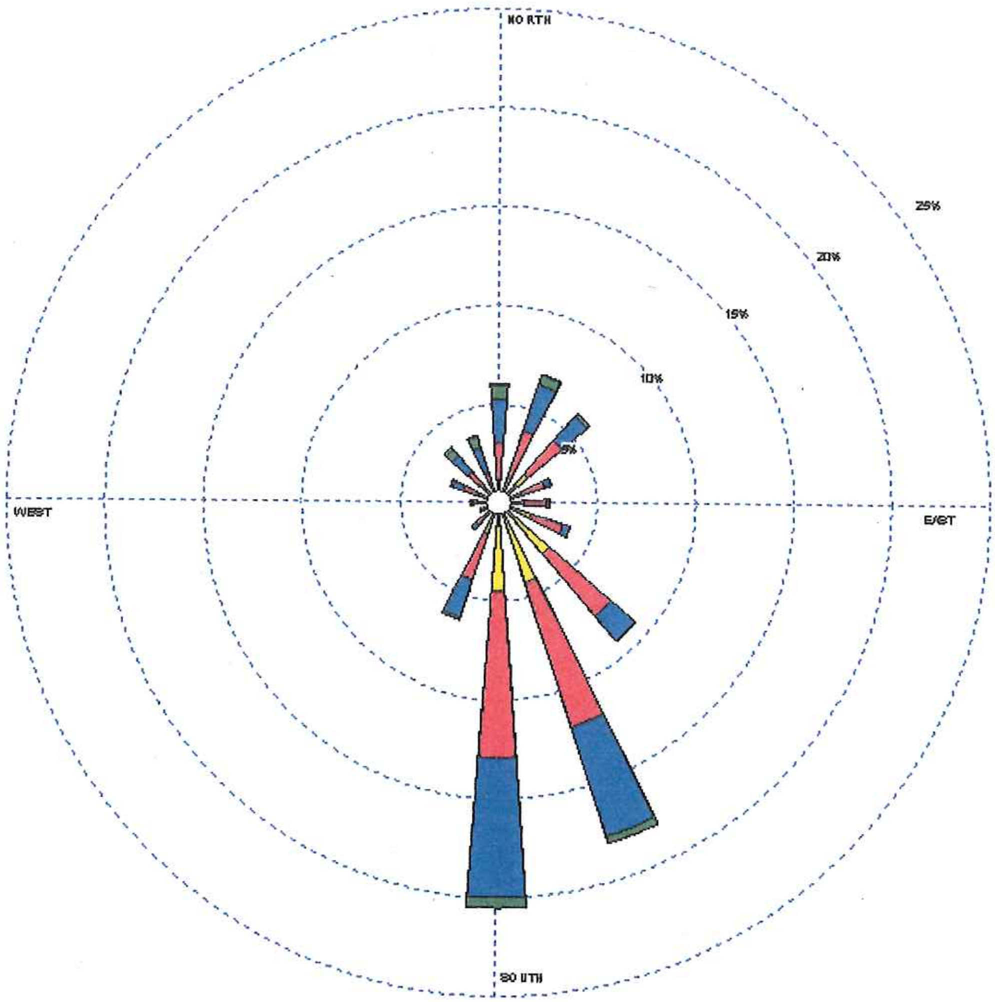


Wind Speed (m/s)	MODELER	DATE	COMPANY NAME
	Sara West	8/29/2002	USDA-ARS
> 11.06	DISPLAY	UNIT	COMMENTS
8.49 - 11.06	Wind Speed	m/s	
5.40 - 8.49	AVG. WIND SPEED	CALM WINDS	
3.34 - 5.40	4.97 m/s	3.99%	
1.80 - 3.34	ORIENTATION	PLOT YEAR-DATE-TIME	
0.51 - 1.80	Direction (blowing from)	1961 Mar 1 - Mar 31 Midnight - 11 PM	

WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

WIND ROSE PLOT

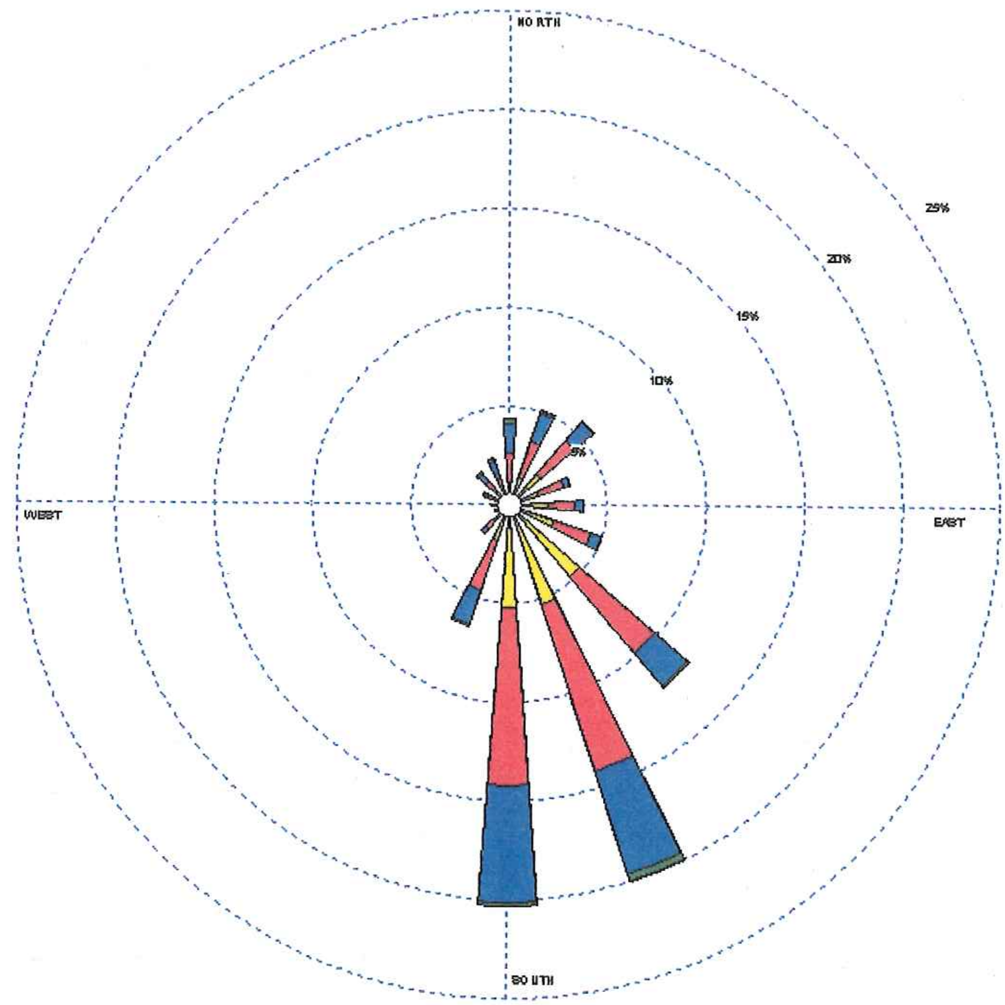
Station #13958 - AUSTIN/MUNICIPAL ARPT, TX



Wind Speed (m/s)	MODELER	DATE	COMPANY NAME
> 11.06	Sara West	8/29/2002	USDA-ARS
8.49 - 11.06	DISPLAY: Wind Speed	UNIT: m/s	COMMENTS
5.40 - 8.49	AVG. WIND SPEED: 4.68 m/s	CALM WINDS: 3.55%	
3.34 - 5.40	ORIENTATION: Direction (blowing from)	PLOT YEAR-DATE-TIME: 1961 Apr 1 - Apr 30 Midnight - 11 PM	
1.80 - 3.34			
0.51 - 1.80			

WIND ROSE PLOT

Station #13958 - AUSTIN/MUNICIPAL ARPT, TX

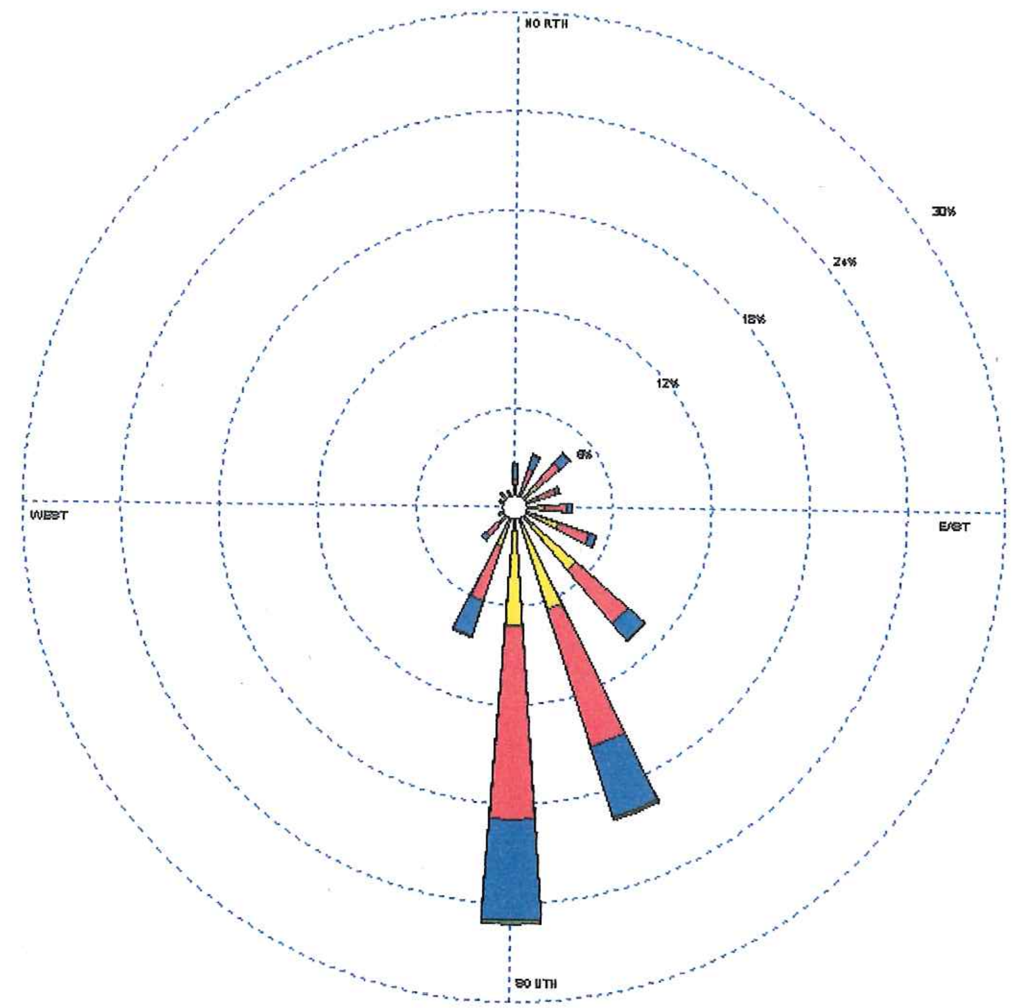


Wind Speed (m/s)	MODELER	DATE	COMPANY NAME
> 11.06	Sara West	8/29/2002	USDA-ARS
8.49 - 11.06	DISPLAY Wind Speed	UNIT m/s	COMMENTS
5.40 - 8.49	AVG. WIND SPEED 4.33 m/s	CALM WINDS 4.23%	
3.34 - 5.40	ORIENTATION Direction (blowing from)	PLOT YEAR-DATE-TIME 1961 May 1 - May 31 Midnight - 11 PM	
1.80 - 3.34			
0.51 - 1.80			

WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

WIND ROSE PLOT

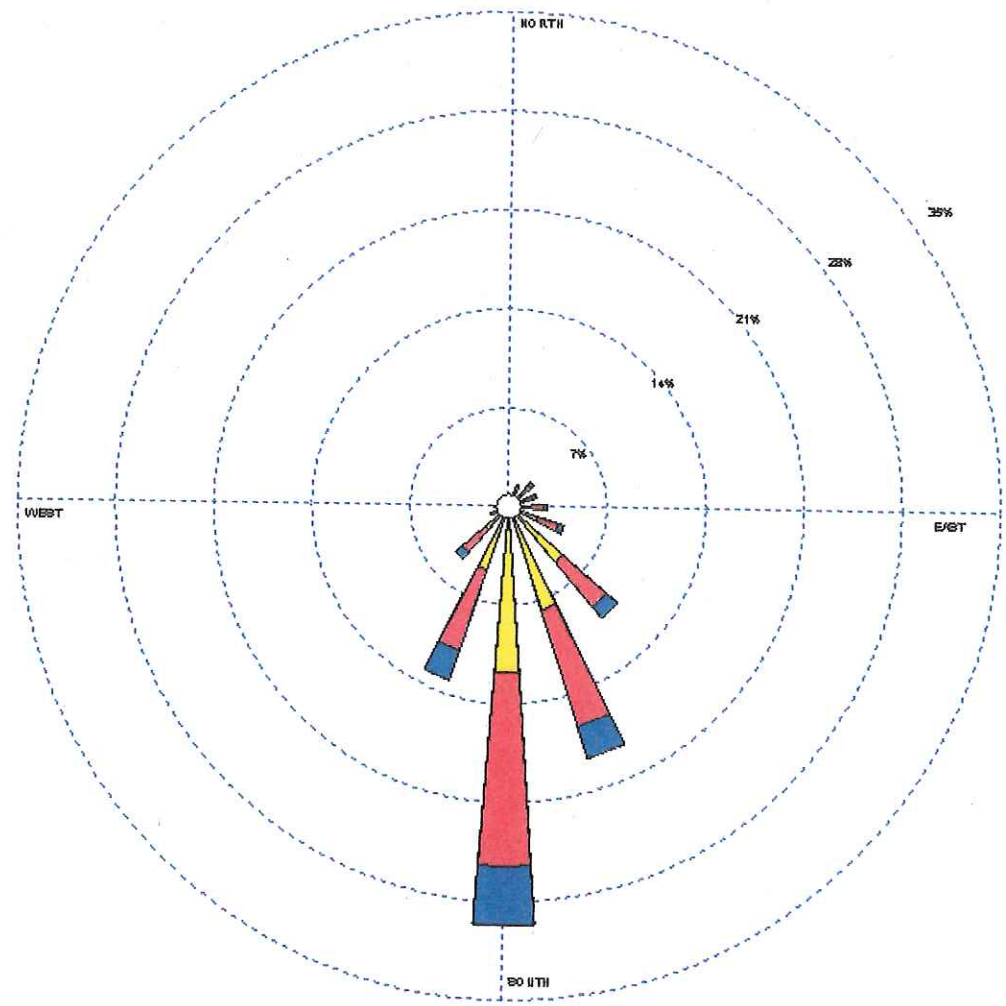
Station #13958 - AUSTIN/MUNICIPAL ARPT, TX



Wind Speed (m/s)			
> 11.06	MODELER Sara West	DATE 8/29/2002	COMPANY NAME USDA-ARS
8.49 - 11.06	DISPLAY Wind Speed	UNIT m/s	COMMENTS
5.40 - 8.49	AVG. WIND SPEED 4.08 m/s	CALM WINDS 6.01%	
3.34 - 5.40 1.80 - 3.34 0.51 - 1.80	ORIENTATION Direction (blowing from)	PLOT YEAR-DATE-TIME 1961 Jun 1 - Jun 30 Midnight - 11 PM	

WIND ROSE PLOT

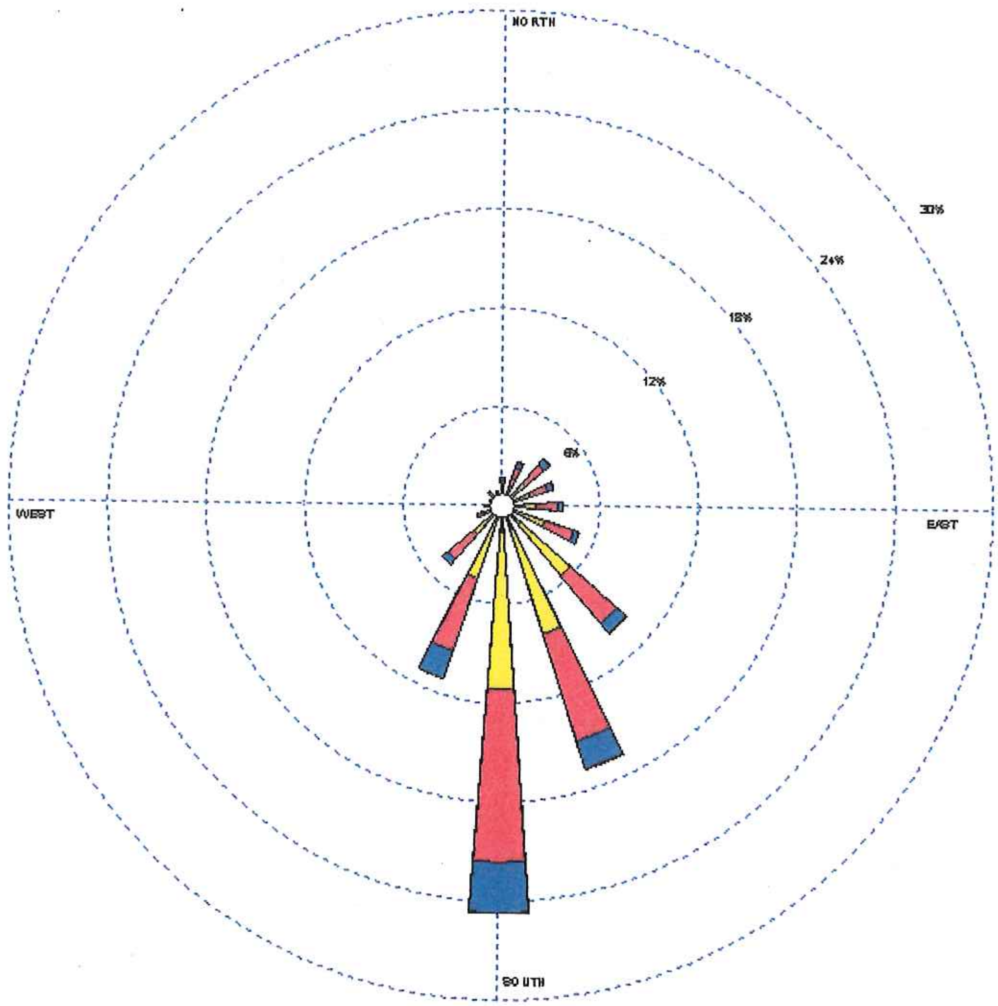
Station #13958 - AUSTIN/MUNICIPAL ARPT, TX



Wind Speed (m/s)	MODELER Sara West	DATE 8/29/2002	COMPANY NAME USDA-ARS
> 11.06	DISPLAY Wind Speed	UNIT m/s	COMMENTS
8.49 - 11.06 5.40 - 8.49	AVG. WIND SPEED 3.74 m/s	CALM WINDS 5.14%	
3.34 - 5.40 1.80 - 3.34 0.51 - 1.80	ORIENTATION Direction (blowing from)	PLOT YEAR-DATE-TIME 1961 Jul 1 - Jul 31 Midnight - 11 PM	

WIND ROSE PLOT

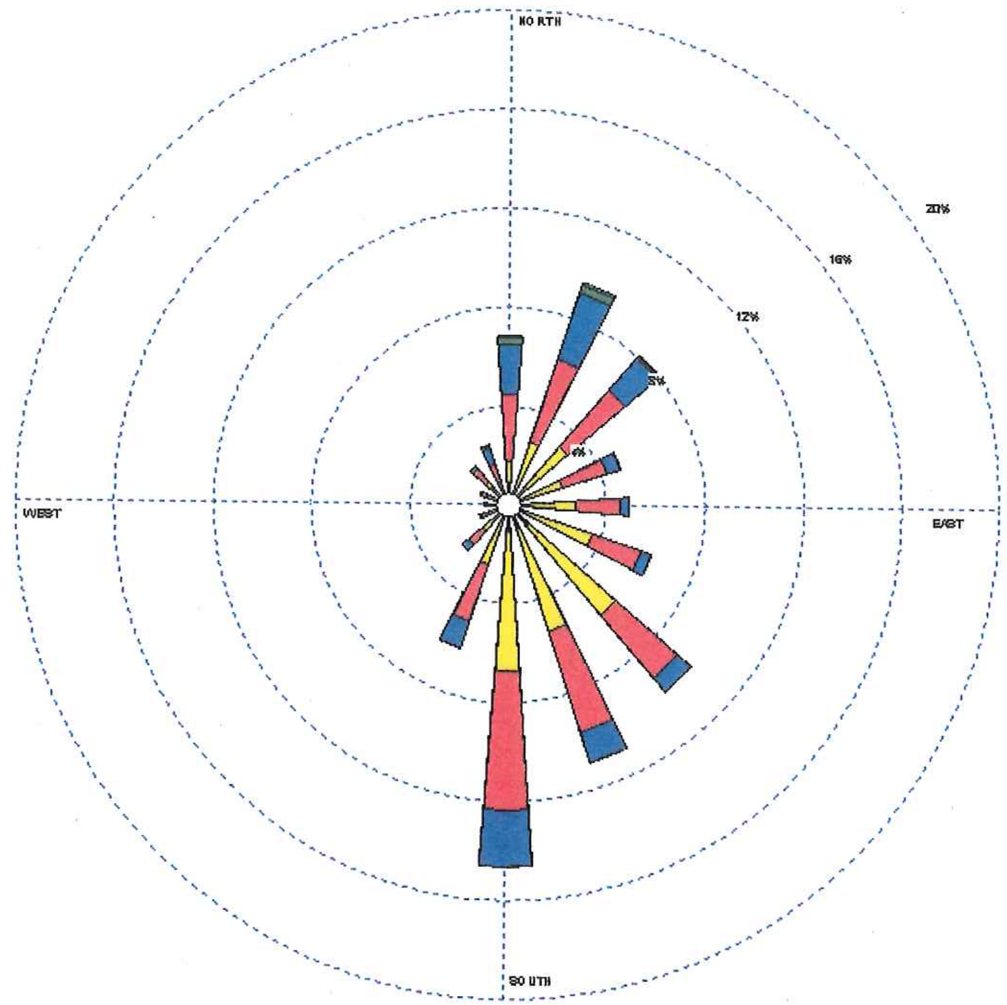
Station #13958 - AUSTIN/MUNICIPAL ARPT, TX



Wind Speed (m/s)	MODELER Sara West	DATE 8/29/2002	COMPANY NAME USDA-ARS
> 11.06 8.49 - 11.06	DISPLAY Wind Speed	UNIT m/s	COMMENTS
5.40 - 8.49 3.34 - 5.40	AVG. WIND SPEED 3.58 m/s	CALM WINDS 6.33%	
1.80 - 3.34 0.51 - 1.80	ORIENTATION Direction (blowing from)	PLOT YEAR-DATE-TIME 1961 Aug 1 - Aug 31 Midnight - 11 PM	

WIND ROSE PLOT

Station #13958 - AUSTIN/MUNICIPAL ARPT, TX

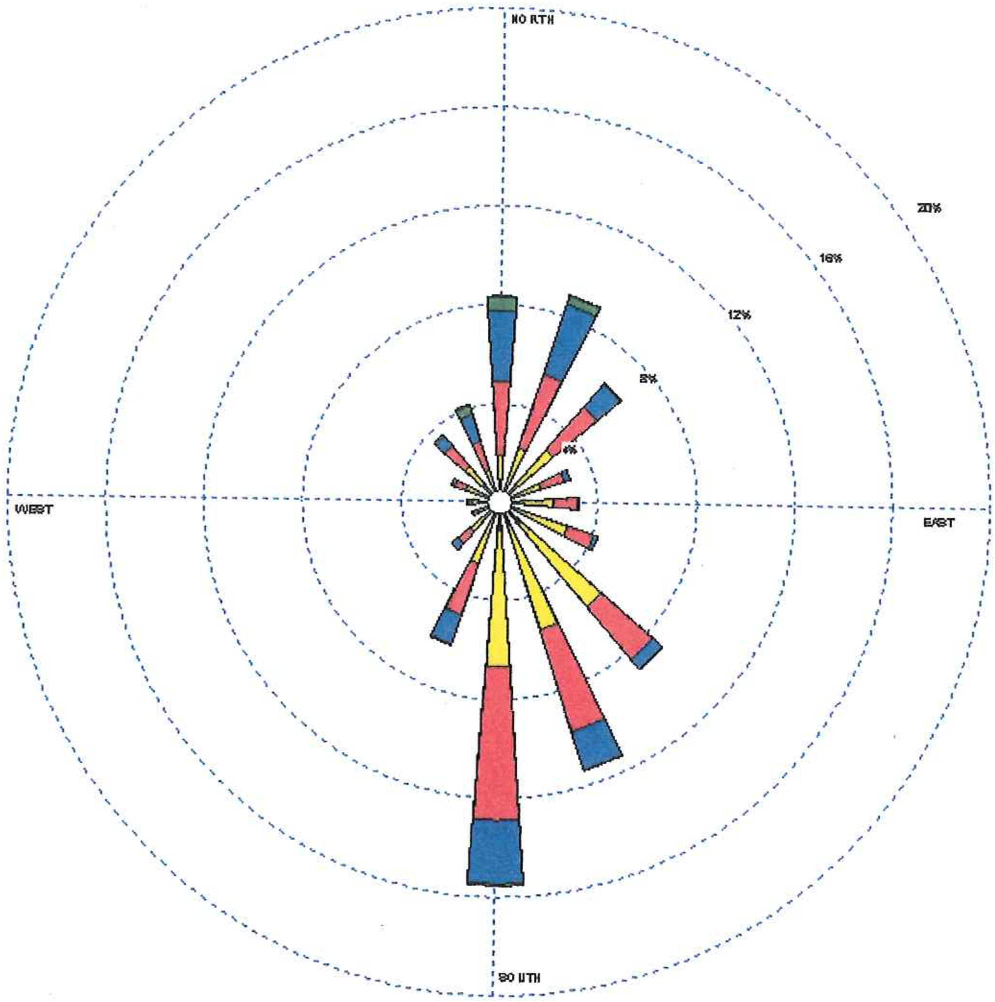


Wind Speed (m/s)			
> 11.06	MODELER: Sara West	DATE: 8/29/2002	COMPANY NAME: USDA-ARS
8.49 - 11.06	DISPLAY: Wind Speed	UNIT: m/s	COMMENTS
5.40 - 8.49	AVG. WIND SPEED: 3.83 m/s	CALM WINDS: 7.55%	
3.34 - 5.40	ORIENTATION: Direction (blowing from)	PLOT YEAR-DATE-TIME: 1961 Sep 1 - Sep 30 Midnight - 11 PM	
1.80 - 3.34			
0.51 - 1.80			

WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

WIND ROSE PLOT

Station #13958 - AUSTIN/MUNICIPAL ARPT, TX

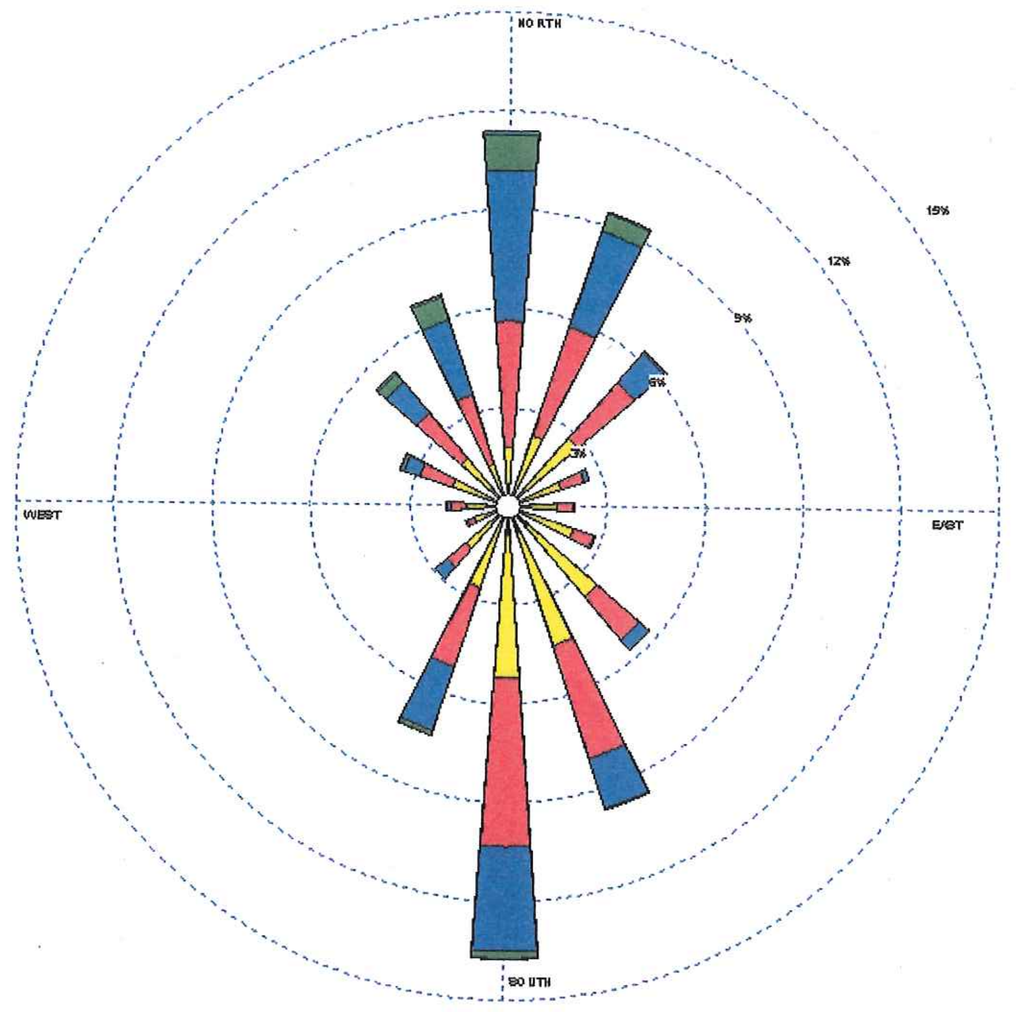


Wind Speed (m/s)	MODELER	DATE	COMPANY NAME
> 11.06	Sara West	8/29/2002	USDA-ARS
8.49 - 11.06	DISPLAY: Wind Speed	UNIT: m/s	COMMENTS
5.40 - 8.49	AVG. WIND SPEED: 3.87 m/s	CALM WINDS: 8.97%	
3.34 - 5.40			
1.80 - 3.34	ORIENTATION: Direction (blowing from)	PLOT YEAR-DATE-TIME: 1961 Oct 1 - Oct 31 Midnight - 11 PM	
0.51 - 1.80			

WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

WIND ROSE PLOT

Station #13958 - AUSTIN/MUNICIPAL ARPT, TX

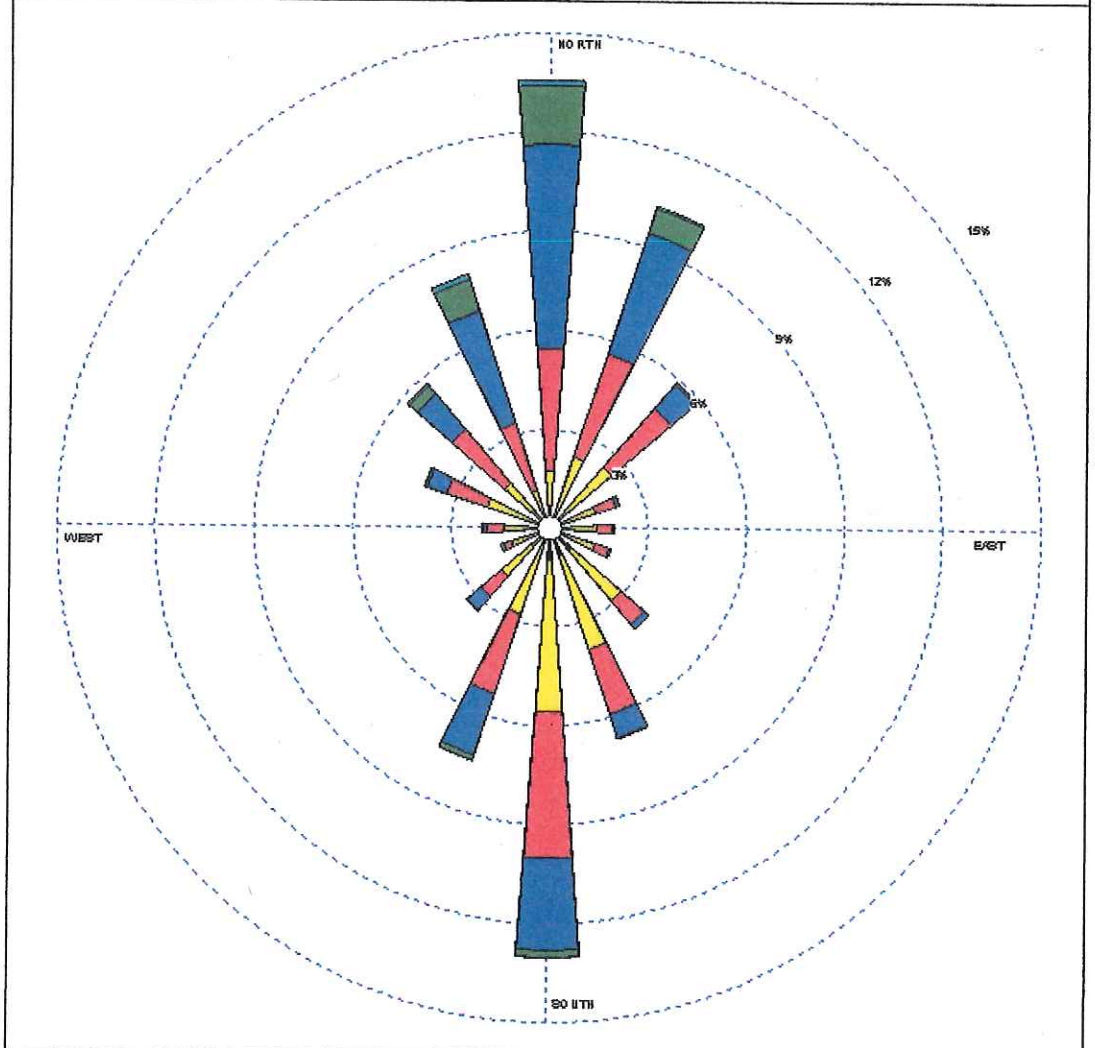


Wind Speed (m/s)			
> 11.06 8.49 - 11.06 5.40 - 8.49 3.34 - 5.40 1.80 - 3.34 0.51 - 1.80	MODELER Sara West	DATE 8/29/2002	COMPANY NAME USDA-ARS
	DISPLAY Wind Speed	UNIT m/s	COMMENTS
	AVG. WIND SPEED 4.28 m/s	CALM WINDS 7.24%	
	ORIENTATION Direction (blowing from)	PLOT YEAR-DATE-TIME 1961 Nov 1 - Nov 30 Midnight - 11 PM	

WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

WIND ROSE PLOT

Station #13958 - AUSTIN/MUNICIPAL ARPT, TX



Wind Speed (m/s)			
> 11.06 8.49 - 11.06 5.40 - 8.49 3.34 - 5.40 1.80 - 3.34 0.51 - 1.80	MODELER Sara West	DATE 8/29/2002	COMPANY NAME USDA-ARS
	DISPLAY Wind Speed	UNIT m/s	COMMENTS
	AVG. WIND SPEED 4.47 m/s	CALM WINDS 8.07%	
	ORIENTATION Direction (blowing from)	PLOT YEAR-DATE-TIME 1961 Dec 1 - Dec 31 Midnight - 11 PM	

CMA Engineering, Inc.

Firm No. F-3053

Robert P. Callegari, P.E.
Felix J. Manka, P.E.

October 20, 2015

hand delivered

RECEIVED
~~OCT 19 2015~~
WATER QUALITY DIVISION
TCEQ

RECEIVED
OCT 20 2015
WATER QUALITY DIVISION
TCEQ

Texas Commission on Environmental Quality
Water Quality Division
Applications Review and Processing Team (MC 148)
Building F, Room 2101
12100 Park 35 Circle
Austin, Texas 78753

Texas Commission on Environmental Quality
Water Quality Division
Applications Review and Processing Team (MC 148)
PO Box 13087
Austin, Texas 78711-3087

Re: City of Dripping Springs
TCEQ Domestic Wastewater Permit Application
CMA Job Number 1695-001

Dear Review Team:

Enclosed please find one original unbound and three (3) copies of the TCEQ Domestic Wastewater Permit Application with attachments for the above referenced project.

The application fee is being submitted under separate cover as requested. If you have any questions concerning this application please contact me at 512-432-1000.

Sincerely,

Robert P. Callegari, P.E.
Principal

Enclosures: One original and three copies of the TCEQ Domestic Wastewater Permit Application

Xc: Ginger Faught, City of Deputy City Administrator
Andy Barrett, Andy Barrett & Associates, PLLC
David Tuckfield, City of DS Wastewater Attorney
James Miertschin Ph.D., P.E., James Miertschin & Associates, Inc.
Eva Steinle-Darling, Ph.D., P.E., Carollo Engineers, Inc.
Tanja Rauch-Williams, Ph.D., P.E., Carollo Engineers, Inc.
Public Viewing Binder

CMA Engineering, Inc.

Firm No. F-3053

Robert P. Callegari, P.E.
Felix J. Manka, P.E.

October 20, 2015

Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office (MC-214)
PO Box 13088
Austin, Texas 78711-3088

Re: City of Dripping Springs
TCEQ Domestic Wastewater Permit Application
CMA Job Number 1695-001

Dear Reviewer:

Please find the enclosed check in the amount of $1,650.00. This check is for payment of the above referenced TCEQ Domestic Wastewater Permit Application.

If you have any questions concerning this application please contact me at 512-432-1000.

Sincerely,

Robert P. Callegari, P.E.
Principal

Enclosure: $1,650.00 Check to the TCEQ

Xc: Ginger Faught, City of Deputy City Administrator
Andy Barrett, Andy Barrett & Associates, PLLC
David Tuckfield, City of DS Wastewater Attorney
James Miertschin Ph.D., P.E., James Miertschin & Associates, Inc.
Eva Steinle-Darling, Ph.D., P.E., Carollo Engineers, Inc.
Tanja Rauch-Williams, Ph.D., P.E., Carollo Engineers, Inc.
Public Viewing Binder

TCEQ
CFR

WQ
MWD

HAPS

14488

003

M

001

15

TCEQ
CFR

WQ
MWD

PERMITS

14488

003

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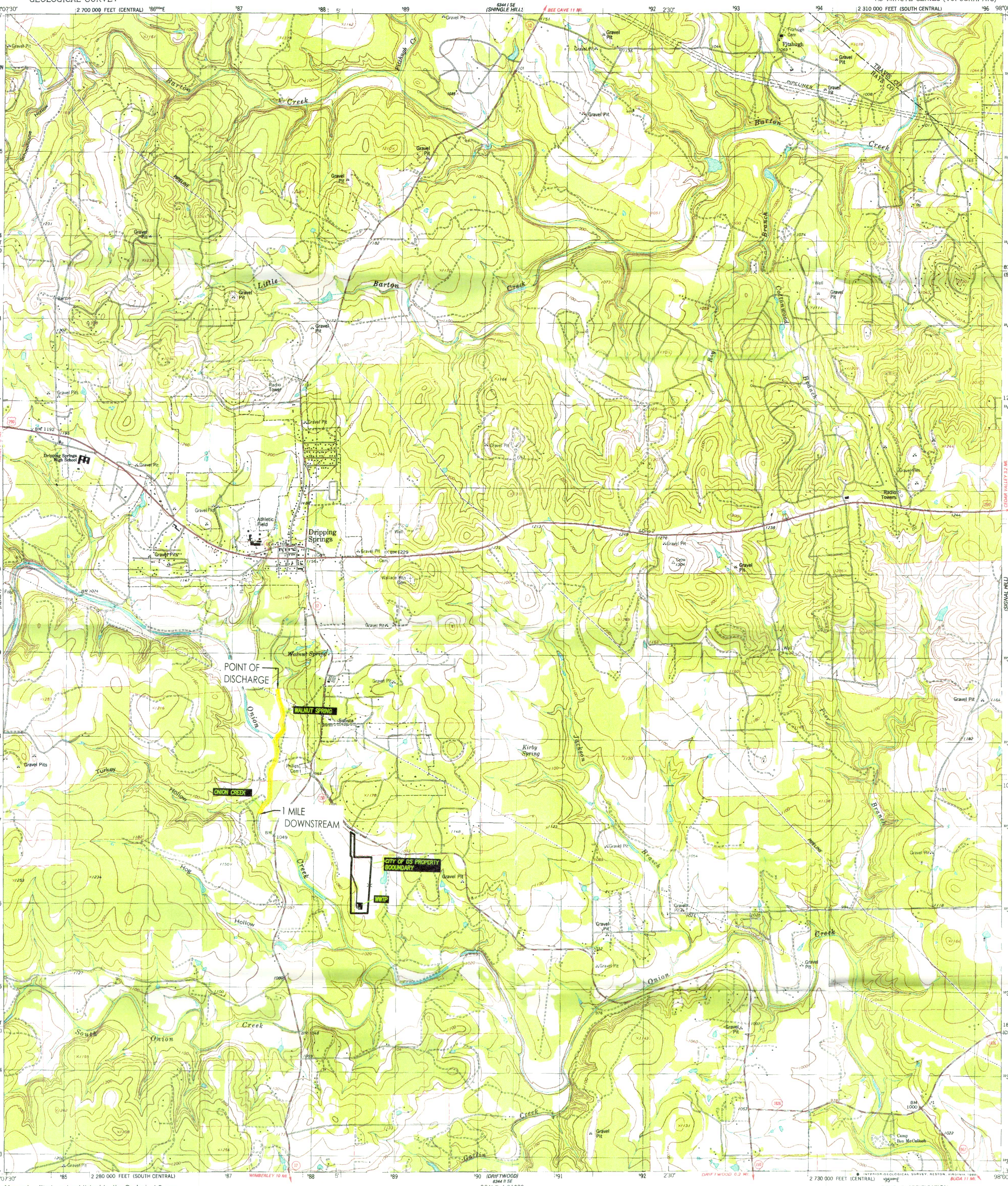
P

001

15

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DRIPPING SPRINGS QUADRANGLE
TEXAS
7.5 MINUTE SERIES (TOPOGRAPHIC)



Mapped, edited, and published by the Geological Survey
Revised in cooperation with the Texas Water Development Board

Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial photographs taken 1962. Field checked 1963. Revised from aerial photographs taken 1985. Field checked 1986. Map edited 1986

Projection: Texas coordinate system, south central zone (Lambert conformal conic)
10,000-foot grid ticks based on Texas coordinate system, south central and central zones
1000-meter Universal Transverse Mercator grid, zone 14
1927 North American Datum
To place on the predicted North American Datum 1983 move the projection lines 18 meters south and 28 meters east as shown by dashed corner ticks

Fine red dashed lines indicate selected fence lines

UTM GRID AND 1986 MAGNETIC NORTH DECLINATION AT CENTER OF MAP DIAGRAM IS APPROXIMATE

SCALE 1:24 000

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION

Primary highway, hard surface — Light-duty road, hard or improved surface
Secondary highway, hard surface — Unimproved road
Interstate Route — U. S. Route — State Route

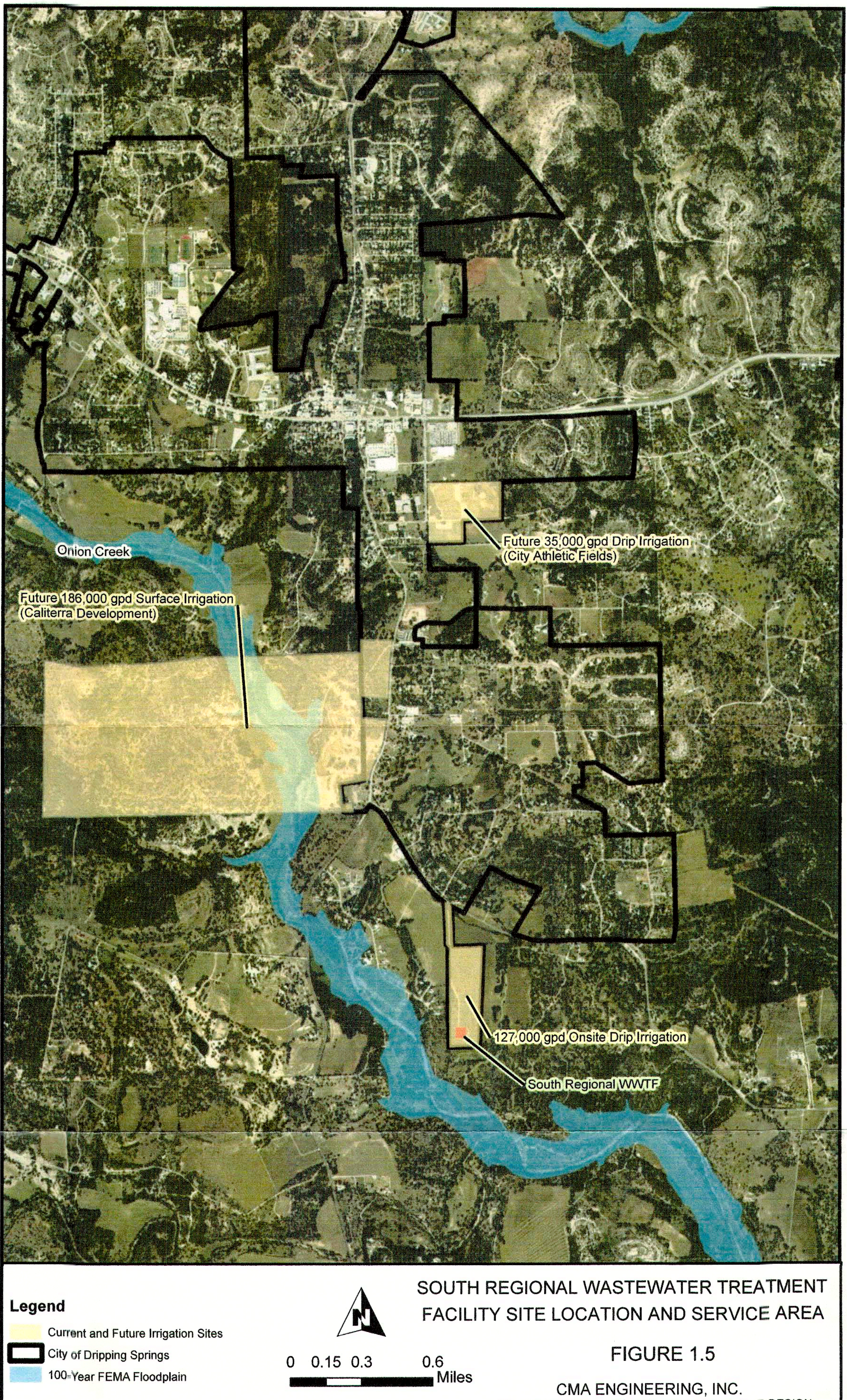
TEXAS
QUADRANGLE LOCATION

3098–114

DRIPPING SPRINGS, TEX.
30098–B1–TF–024

1986

DMA 6344 II NE–SERIES V882



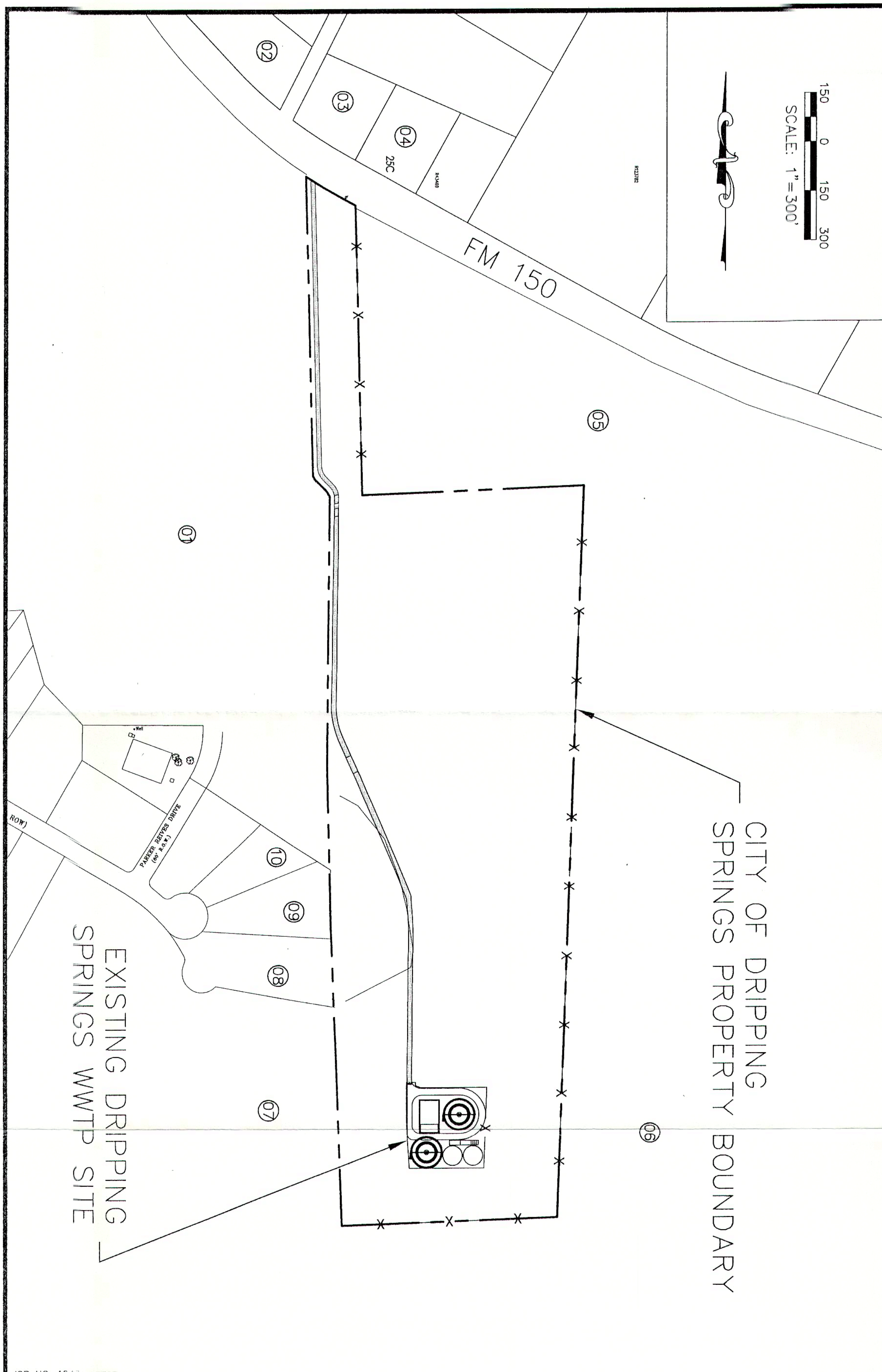
SOUTH REGIONAL WASTEWATER TREATMENT FACILITY SITE LOCATION AND SERVICE AREA

FIGURE 1.5

CMA ENGINEERING, INC.

CITY OF DRIPPING SPRINGS CONCEPTUAL BNR DESIGN

carollo



JOB NO.: 1643-ATT2B

CMA ENGINEERING, INC. 235 LEDGE STONE DRIVE AUSTIN, TEXAS 78737 (512) 432-1000 Fax: (512) 432-1015 Registration # F-3053	HAYS COUNTY CITY OF DRIPPING SPRINGS AFFECTED LANDOWNERS MAP - DS WWTP SITE	ATTACHMENT 2

sroy - Oct 19, 2015 - 2:48pm - File: M:\DWG\1695-DS TCEQ Permit 2\EXHIBITS\1695-ATT02-LANDOWNERS MAP-WWTP.dwg